Serviceanweisung
Service manual

SPP 94

Diese Service-Unterlage wurde ausschließlich für autorisiertes Fachpersonal erstellt.
Für Eingriffe durch nicht autorisierte Personen übernimmt der Hersteller keine Haftung.

This service manual was only made for authorized specialists.
For interventions by not authorized persons producer doesn't take possession of liability.

WICHTIGER HINWEIS/IMPORTANT NOTE

Der integrierte CD-Spieler arbeitet mit unsichtbarem Laserlicht.

Nicht in den Strahl blicken und sich nicht dem Strahl aussetzen!

Vorsicht, Laserstrahlung im Inneren des Gerätes!

Zur Vermeidung von Strahlungsschäden darf das Gehäuse nur von qualifiziertem Fachpersonal geöffnet werden.

Informationsetikett auf der Geräterückseite (siehe Bild).

LASER KLASSE 1

Laser $\lambda = 780$ nm
$P_{max} = 0,5$ mW

Warnetikett in dem Plattenfach (siehe Bild).

UNSICHTBARE LASERSTRAHLUNG
NICHT DEM STRAHL AUSSETZEN
LASER KLASSE 3 B

The integrated CD-Player works with invisible laser-light.

Do not look into this beam and don't abandon yourself to radiation.

Attention, laser-radiation also inside of the unit!

To avoid damages of radiation unit should be opened only by qualified service personnel.

Information label on the rear of unit (see picture).

CLASS 1
LASER PRODUCT

Laser $\lambda = 780$ nm
$P_{max} = 0,5$ mW

Warning label in record-drawer (see picture).

CAUTION
INVISIBLE LASER RADIATION WHEN
OPEN. DO NOT STARE INTO BEAM

VAROITUS!

Suojakoteloa ei saa avata. Laite sisältää laserdiodin, joda lähettää näkymäntöntä silmille vaarallista lasersäteilyä.

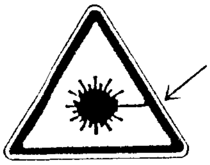
VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

LUOKAN 1 LASERLAITE

KLASS 1 LASER
APPARAT

ADVARSAL:
Usynlig laserstråling ved åbning når
sikkerhedsafbrydere er ude af funktion.
Undgå udsættelse for stråling.

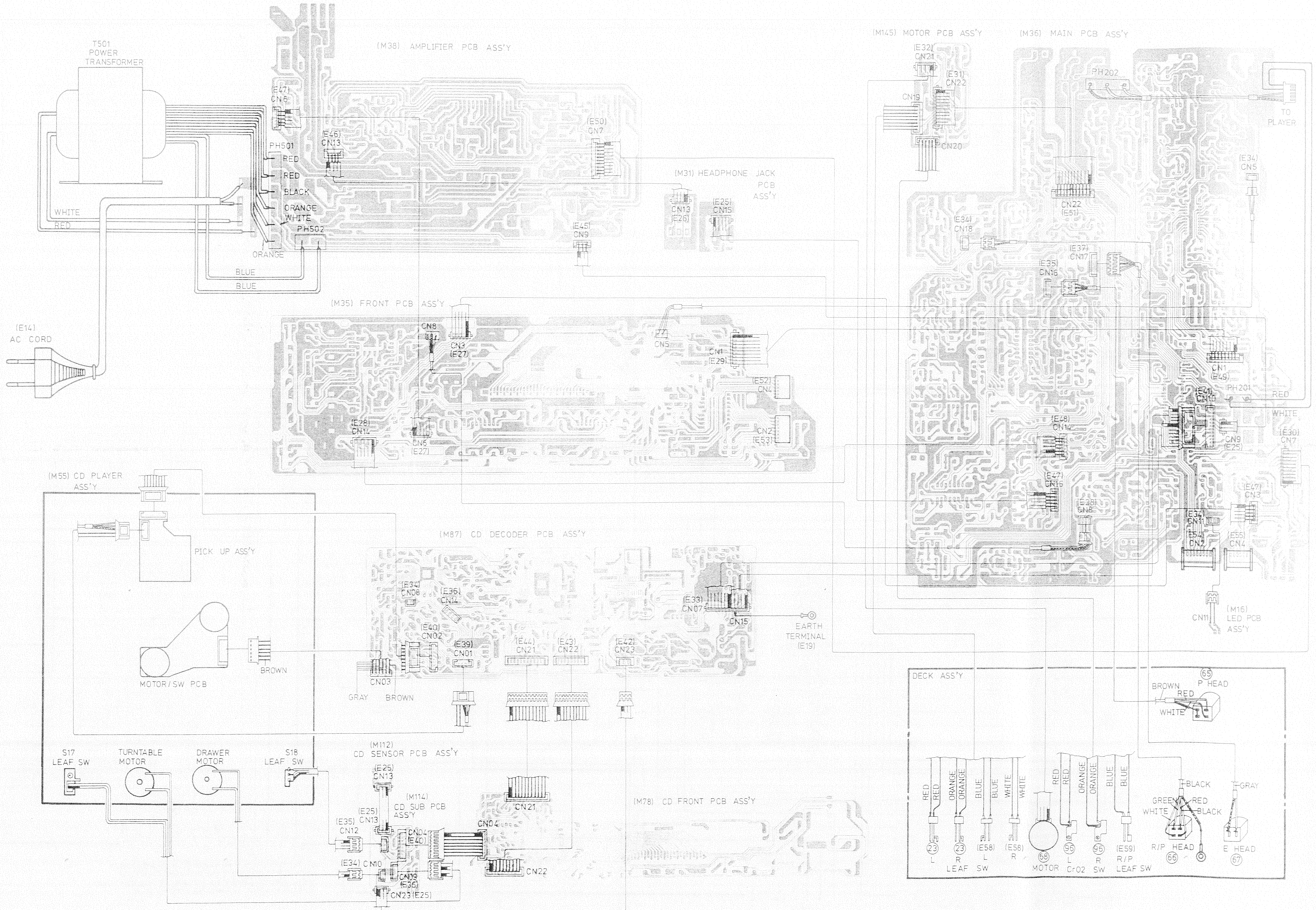


Austrittsöffnung für Laserstrahlung
Discharge orifice for Laser radiation

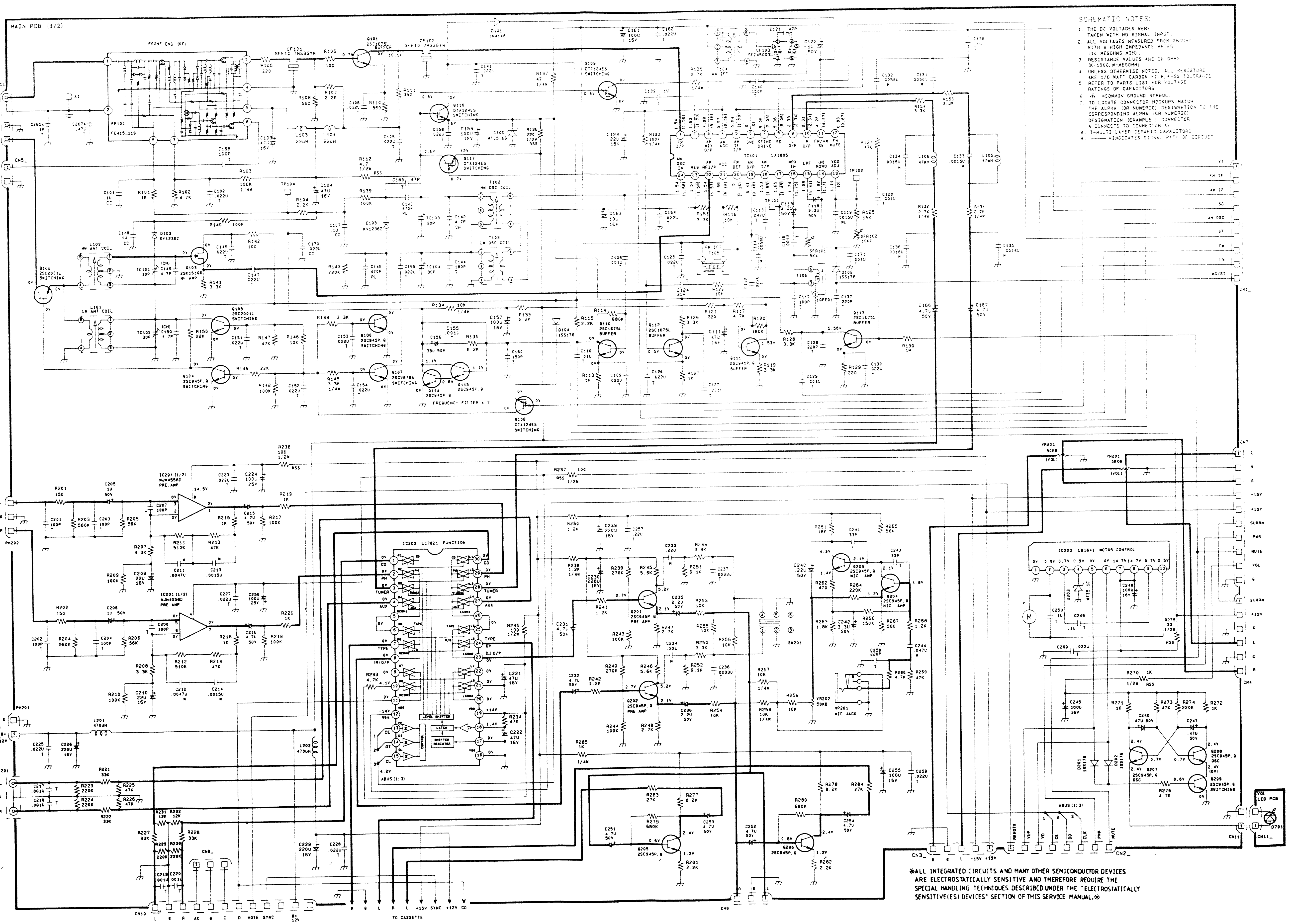
Hinweis für Original-Etikett:
Schrift und Umrandung schwarz, Untergrund gelb.

Indication for original label:
Letters and surrounding black, background yellow.

Verdrahtungsplan
Wiring diagram


T501
POWER
TRANSFORMER
WHITE
RED
(M38) AMPLIFIER PCB ASS'Y
(E47)
CN6
(E46)
CN13
PH501
RED
RED
BLACK
ORANGE
WHITE
PH502
ORANGE
BLUE
BLUE
(E50)
CN7
(M31) HEADPHONE JACK
PCB
ASS'Y
CN13
(E26)
(E25)
CN15
(E45)
CN9
(E14)
AC CORD
(M35) FRONT PCB ASS'Y
CN8
CN3
(E27)
CN5
CN1
(E29)
(E52)
CN4
CN2
(E53)
(E28)
CN14
CN5
(E27)
(M145) MOTOR PCB ASS'Y
(E32)
CN21
(E31)
CN22
CN19
CN20
(M36) MAIN PCB ASS'Y
PH202
TO
PLAYER
(E34)
CN5
CN22
(E51)
(E34)
CN18
(E37)
CN17
(E35)
CN16
CN1
(E49)
PH201
(E41)
CN10
RED
WHITE
(E48)
CN14
CN9
(E25)
(E30)
CN7
(E47)
CN15
(E38)
CN8
(E47)
CN3
(E34)
CN11
(E54)
CN2
(E55)
CN4
CN11
(M16)
LED PCB
ASS'Y
(M55) CD PLAYER
ASS'Y
PICK UP ASS'Y
MOTOR/SW PCB
BROWN
(M87) CD DECODER PCB ASS'Y
(E34)
CN06
(E36)
CN14
(E33)
CN07
CN15
EARTH
TERMINAL
(E19)
(E40)
CN02
(E39)
CN01
(E44)
CN21
(E43)
CN22
(E42)
CN23
CN03
GRAY
BROWN
S17
LEAF SW
TURNTABLE
MOTOR
DRAWER
MOTOR
S18
LEAF SW
(M112)
CD SENSOR PCB ASS'Y
(E25)
CN13
(M114)
CD SUB PCB
ASS'Y
(E25)
CN13
(E35)
CN12
CN04
(E40)
CN04
CN21
(E34) CN10
CN09
(E36)
CN23 (E25)
CN22
(M78) CD FRONT PCB ASS'Y
DECK ASS'Y
65
P HEAD
BROWN
RED
WHITE
RED
RED
ORANGE
ORANGE
BLUE
BLUE
WHITE
WHITE
RED
RED
ORANGE
ORANGE
BLUE
BLUE
BLACK
GREEN
RED
WHITE
BLACK
GRAY
23
L
23
R
LEAF SW
(E58)
L
(E58)
R
65
MOTOR
96
L
CrO2
96
R
SW
(E59)
R/P
LEAF SW
R/P HEAD
66
E HEAD
67

Schaltbild Tuner/Vorverstärker
Circuit diagram tuner/pre amplifier


MAIN PCB (1/2)
FRONT END (RF)
FE101 FE415_11B
JK101 FM ANT
AM ANT
FM OSC
CN5
L102 MW ANT COIL
L101 LW ANT COIL
T102 MW OSC COIL
T103 LW OSC COIL
IC101 LA1805
Q101 2SC2670 BUFFER
Q109 DTC124ES SWITCHING
Q116 DTA124ES SWITCHING
Q117 DTA124ES SWITCHING
Q103 2SK161GR RF AMP
Q102 2SC2001L SWITCHING
Q105 2SC2001L SWITCHING
Q104 2SC945P,Q SWITCHING
Q106 2SC945P,Q SWITCHING
Q107 2SC2878A SWITCHING
Q114 2SC945P,Q
Q115 2SC945P,Q
FREQUENCY FILTER x 2
Q108 DTA124ES SWITCHING
Q110 2SC1675L BUFFER
Q112 2SC1675L BUFFER
Q111 2SC945P,Q BUFFER
Q113 2SC1675L BUFFER
VT
FM IF
AM IF
SD
AM OSC
ST
FM
LW
MO/ST
CN1
IC201 (1/2) NJM4558D PRE AMP
PHONO
PH202
PH201
IC202 LC7821 FUNCTION
TUNER
AUX
TAPE
TYPE
LEVEL SHIFTER
LATCH
SHIFTER RESISTER
CONTROL
ABUS (1:3)
Q201 2SC945P,Q PRE AMP
Q202 2SC945P,Q PRE AMP
Q203 2SC945P,Q MIC AMP
Q204 2SC945P,Q MIC AMP
VR202 50KB
HP201 MIC JACK
SW201
VR201 50KB (VOL)
CN7
IC203 LB1641 MOTOR CONTROL
Q207 2SC945P,Q OSC
Q208 2SC945P,Q OSC
Q209 2SC945P,Q SWITCHING
VOL LED PCB
D701
CN11
CN4
JK201
AUX
CN10
CN9
CN8
Q205 2SC945P,Q
Q206 2SC945P,Q
L G R AC G C D MOTE SYNC B+ 12V
R G L R L +15V SYNC +12V CC
TO CASSETTE
CN3 R G L -15V +15V
REMOTE VUP VD CE DO CLK PWR MUTE
CN2

SCHEMATIC NOTES:

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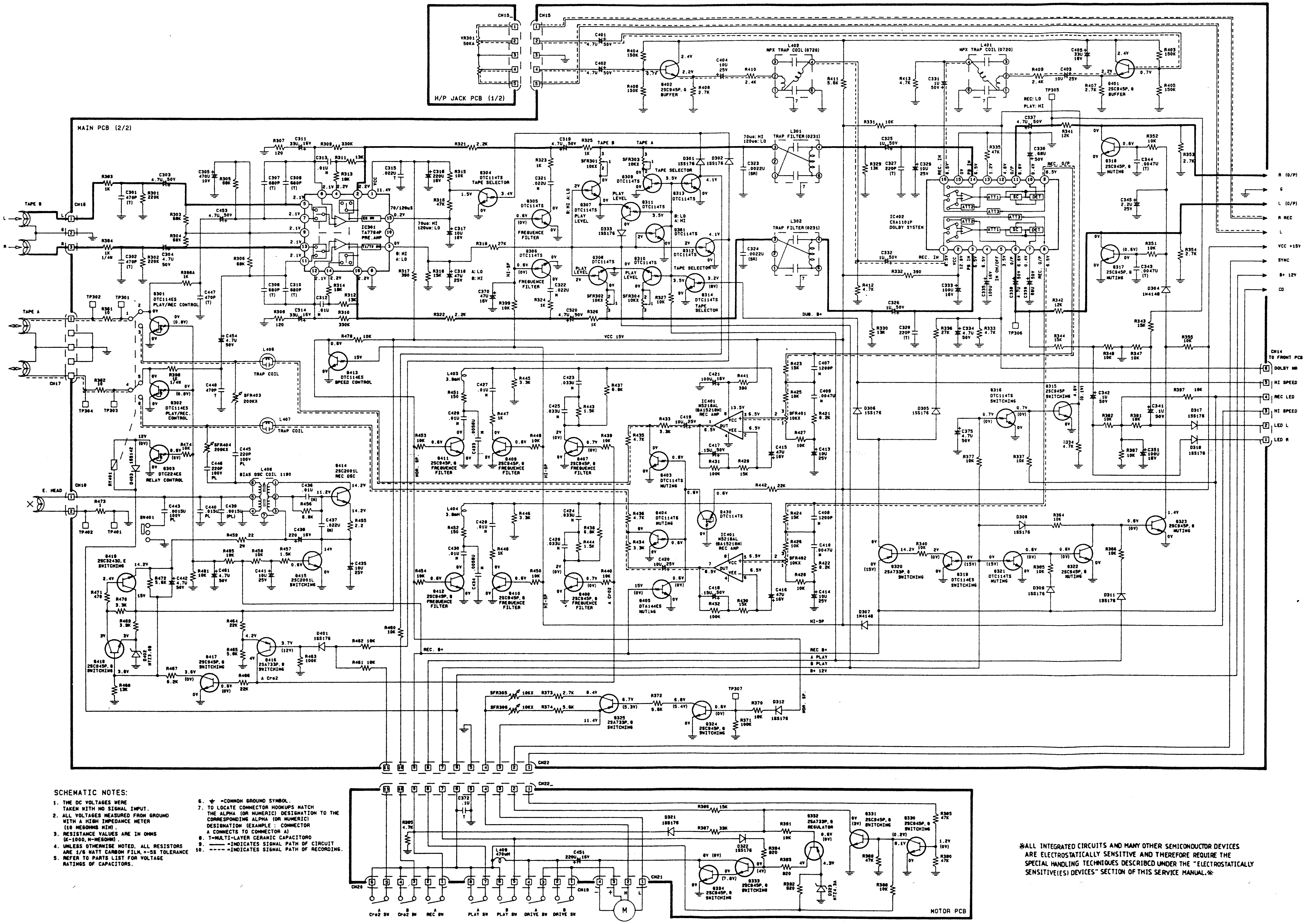
8. T-MULTI-LAYER CERAMIC CAPACITORS
9. ——— -INDICATES SIGNAL PATH OF CIRCUIT

※ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBCD UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.※

Schaltbild Cassette
Circuit diagram cassette



H/P JACK PCB (1/2)
CN15
VR301 50KA
MAIN PCB (2/2)
TAPE B
TAPE A
CN16
CN17
CN18
E. HEAD
IC301 TA7784P PRE. AMP
IC402 CXA1101P DOLBY SYSTEM
IC401 HA5218AL (BA15218N) REC AMP
L401 MPX TRAP COIL (0720)
L402 MPX TRAP COIL (0720)
L301 TRAP FILTER (0231)
L302 TRAP FILTER (0231)
L405 TRAP COIL
L407 TRAP COIL
L408 BIAS OSC COIL 1180
Q414 2SC2001L REC OSC
Q303 DTC224ES RELAY CONTROL
R (O/P)
E
L (O/P)
R REC
L
VCC +15V
SYNC
B+ 12V
CD
CN14 TO FRONT PCB
DOLBY NR
HI SPEED
REC LED
HI SPEED
LED L
LED R
CN22
CN20
CN21
CN19
Cro2 SW
Cro2 SW
REC SW
PLAY SW
PLAY SW
DRIVE SW
DRIVE SW
M
MOTOR PCB

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9. ——— =INDICATES SIGNAL PATH OF CIRCUIT
10. ---- =INDICATES SIGNAL PATH OF RECORDING.

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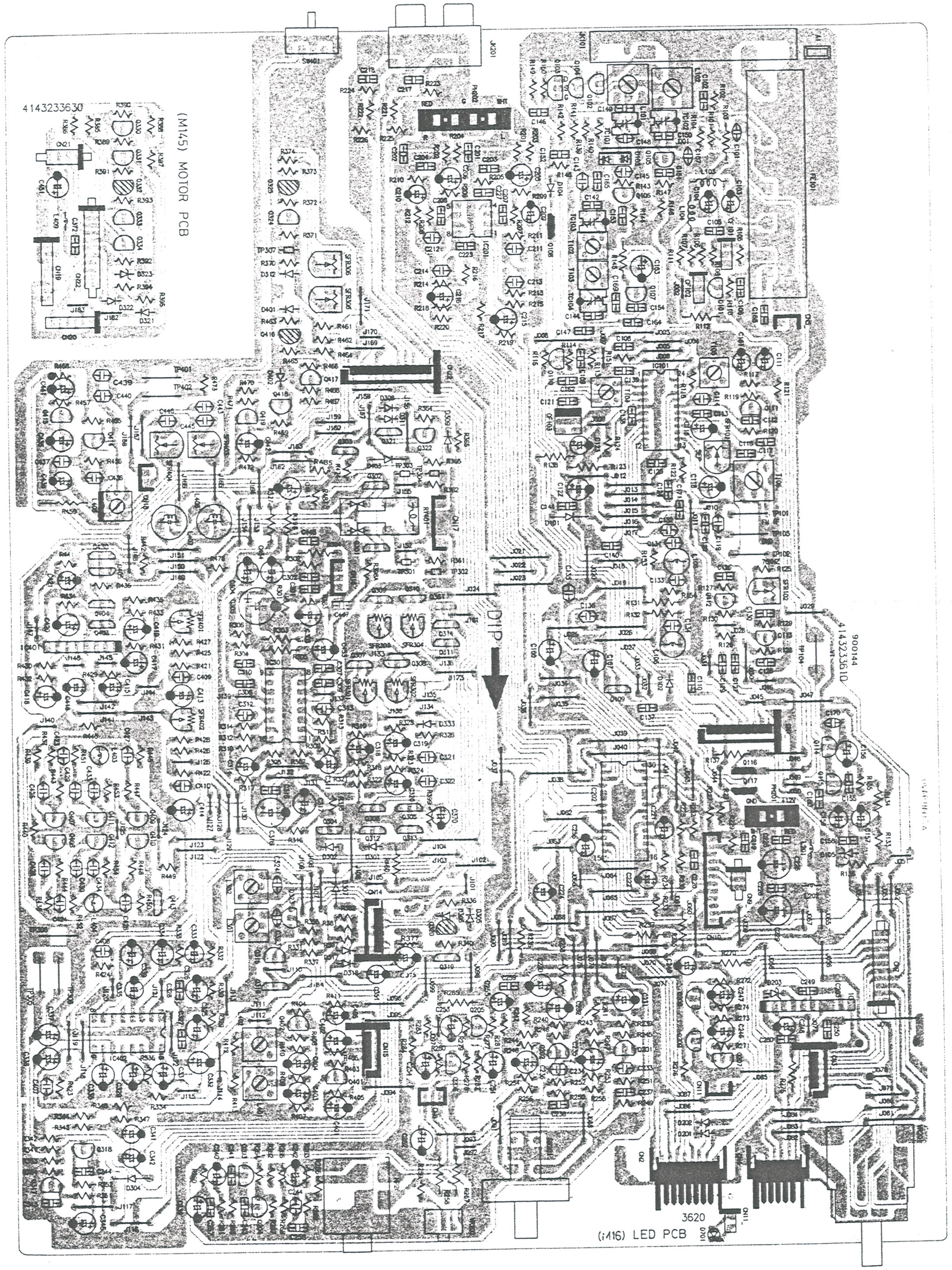
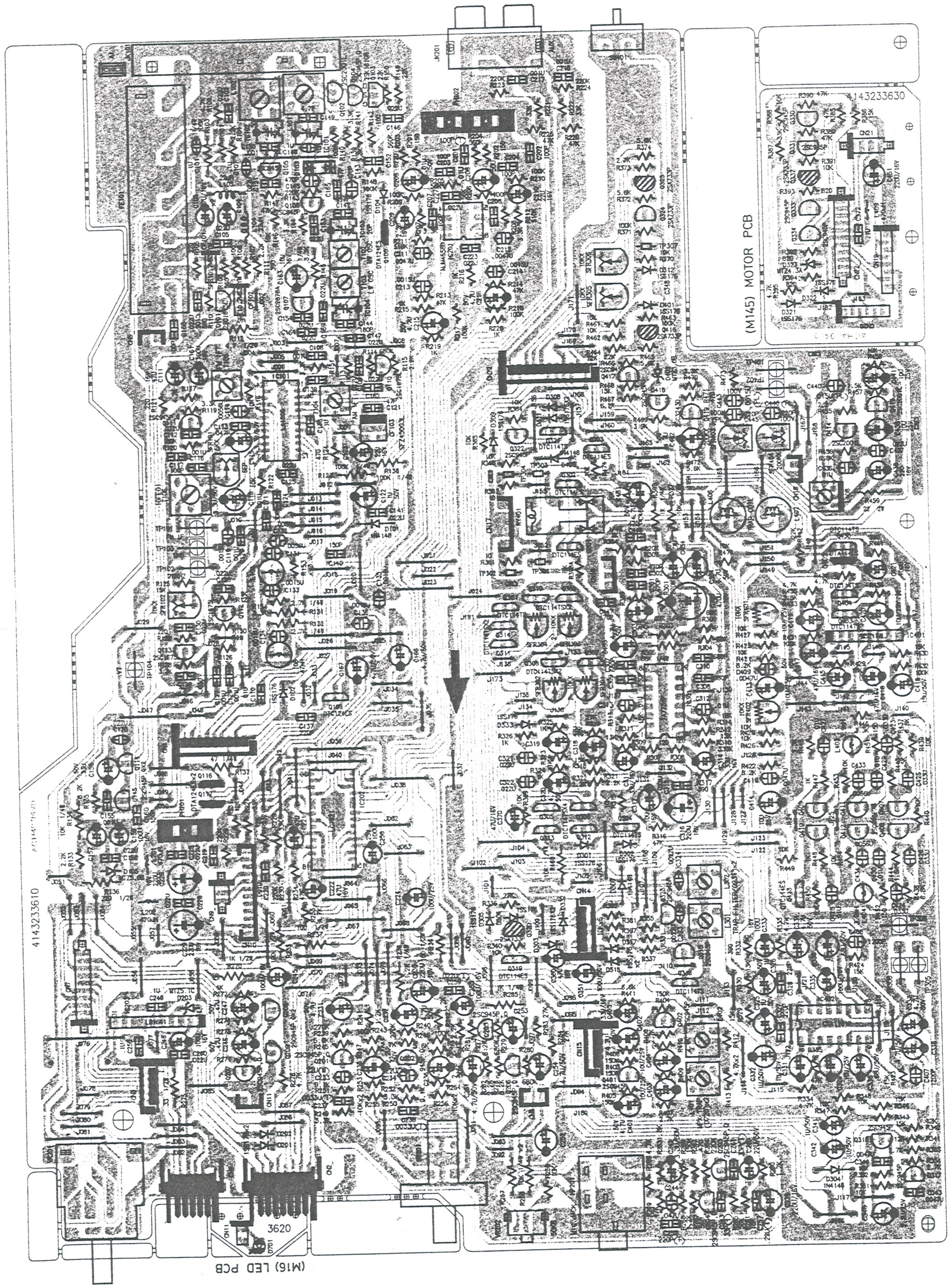
Hauptplatine
Main P.C.B.

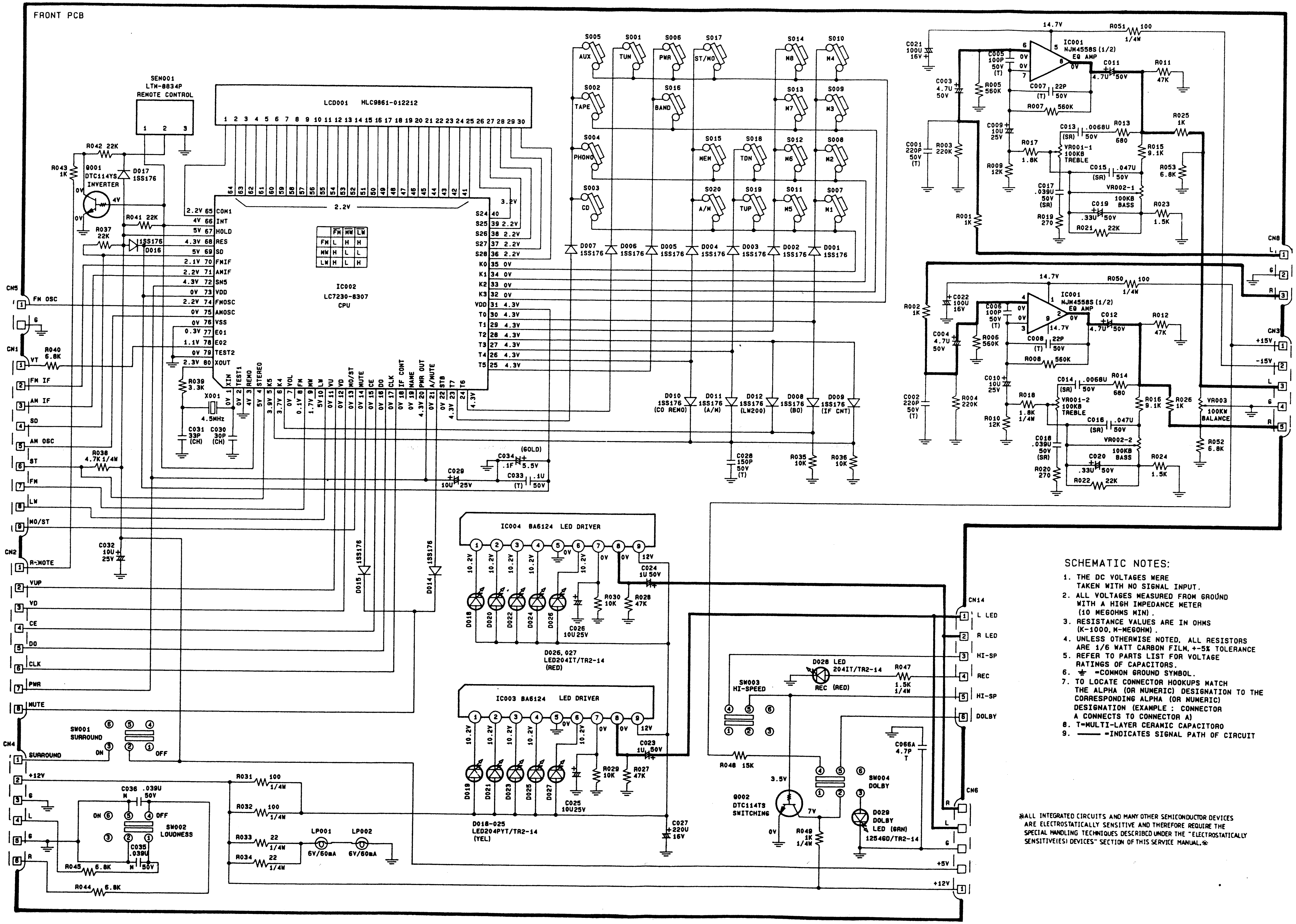
Bestückungsseite
Component side


4143233630
(M145) MOTOR PCB
DIP
4143233610
900144
3620
(M16) LED PCB

Leiterbahnseite
Solder side


4143233630
(M145) MOTOR PCB
4143233610
3620
(M16) LED PCB

Schaltbild Frontplatine
Circuit diagram front P.C.B.


FRONT PCB
SEN001 LTM-8834P REMOTE CONTROL
LCD001 HLC9861-012212
IC002 LC7230-8307 CPU
Q001 DTC114YS INVERTER
X001 4.5MHz
IC001 NJM4558S (1/2) EQ AMP
VR001-1 100KB TREBLE
VR002-1 100KB BASS
VR001-2 100KB TREBLE
VR002-2 100KB BASS
VR003 100KW BALANCE
IC004 BA6124 LED DRIVER
IC003 BA6124 LED DRIVER
D026, 027 LED204IT/TR2-14 (RED)
D018-025 LED204PYT/TR2-14 (YEL)
D028 LED 204IT/TR2-14 REC (RED)
D029 DOLBY LED (GRN) 1254GD/TR2-14
Q002 DTC114TS SWITCHING
SW001 SURROUND
SW002 LOUDNESS
SW003 HI-SPEED
SW004 DOLBY
LP001 6V/60mA
LP002 6V/60mA
S005 AUX
S001 TUN
S006 PWR
S017 ST/MO
S014 M8
S010 M4
S002 TAPE
S016 BAND
S013 M7
S009 M3
S004 PHONO
S015 MEM
S018 TDN
S012 M6
S008 M2
S003 CD
S020 A/M
S019 TUP
S011 M5
S007 M1
D010 1SS176 (CD REMO)
D011 1SS176 (A/M)
D012 1SS176 (LW200)
D008 1SS176 (BO)
D009 1SS176 (IF CNT)
CN1
FM IF
AM IF
SD
AM OSC
ST
FM
LW
MO/ST
CN2
REMOTE
VUP
VD
CE
DO
CLK
PWR
MUTE
CN4
SURROUND
+12V
CN5
FM OSC
CN14
L LED
R LED
HI-SP
REC
DOLBY
CN6
+5V
+12V
CN8
CN3
+15V
-15V

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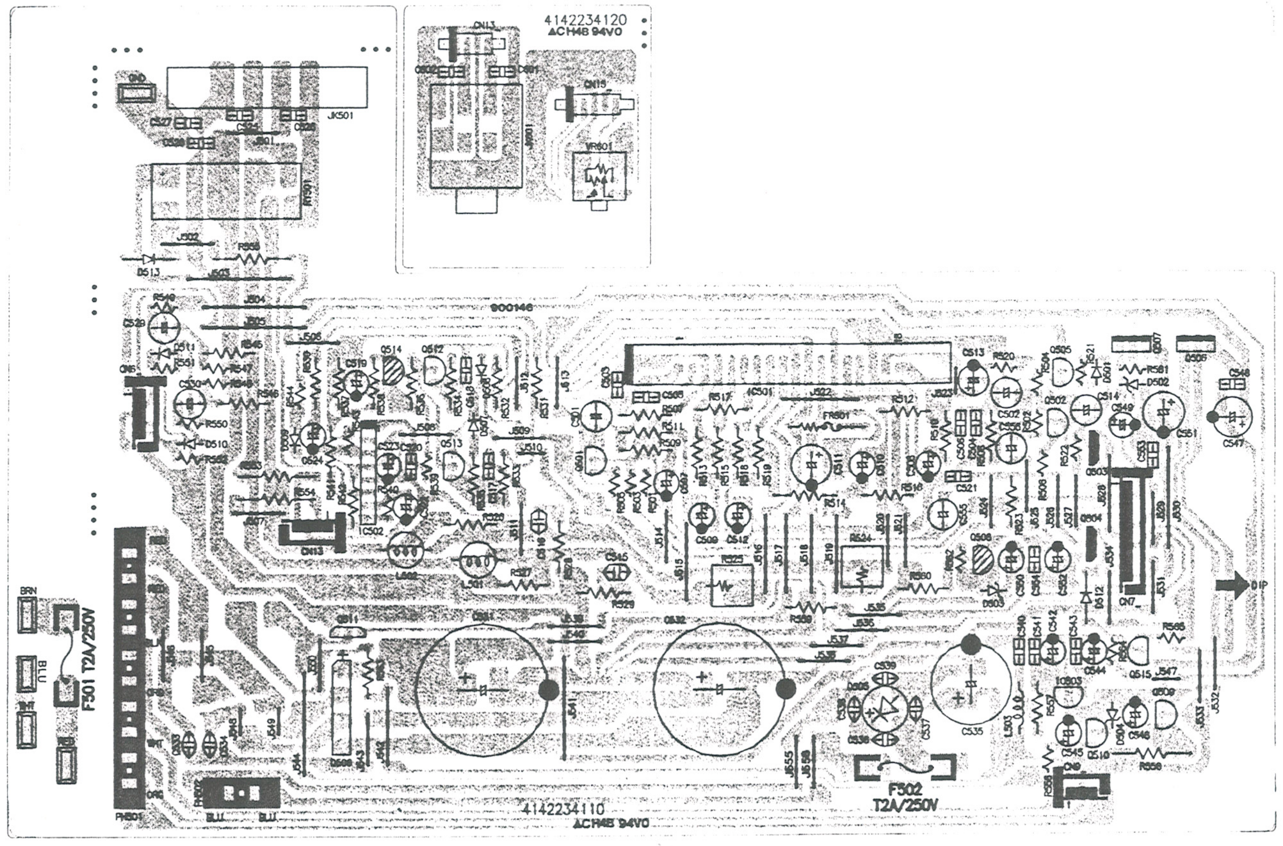
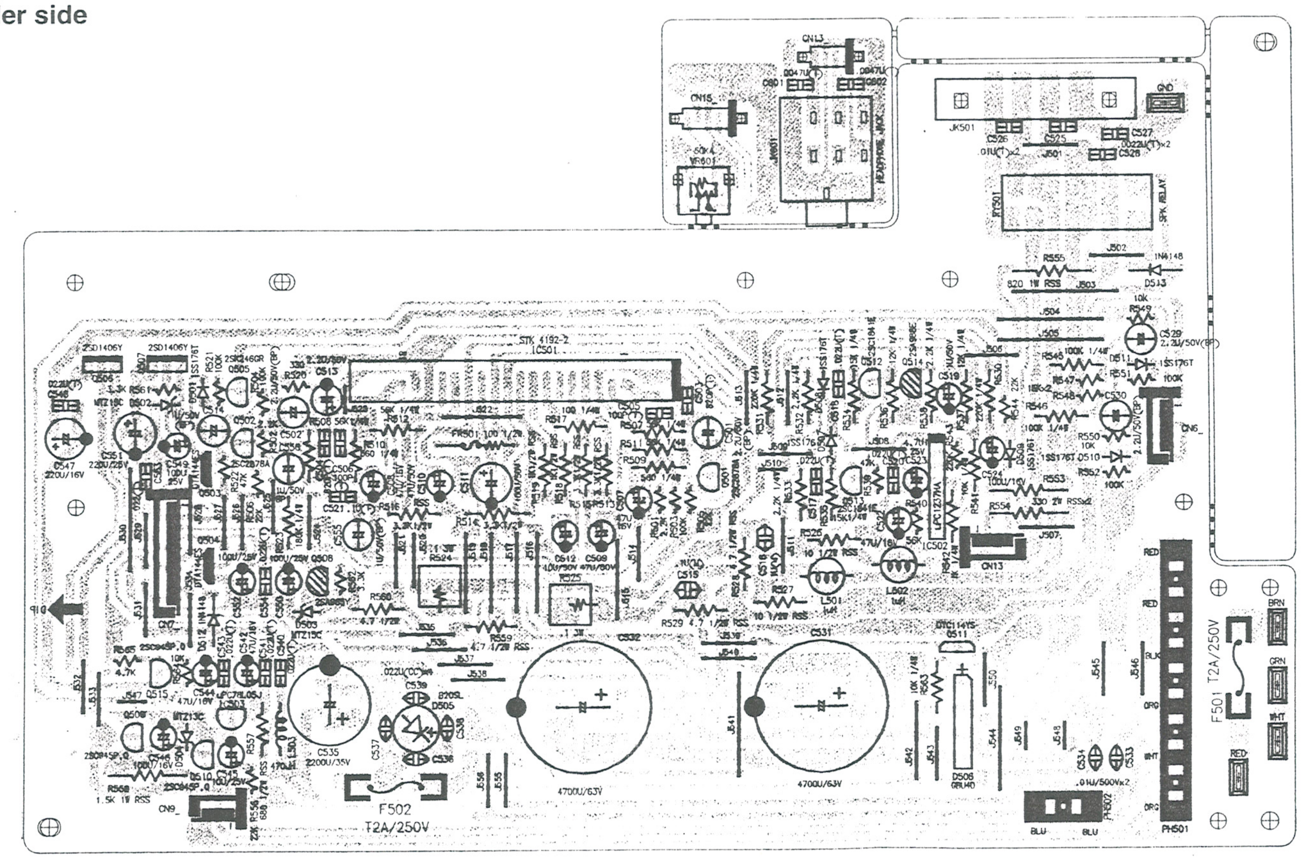
Netzteil-/Endstufenplatine
Amplifier P.C.B.

Bestückungsseite
Component side

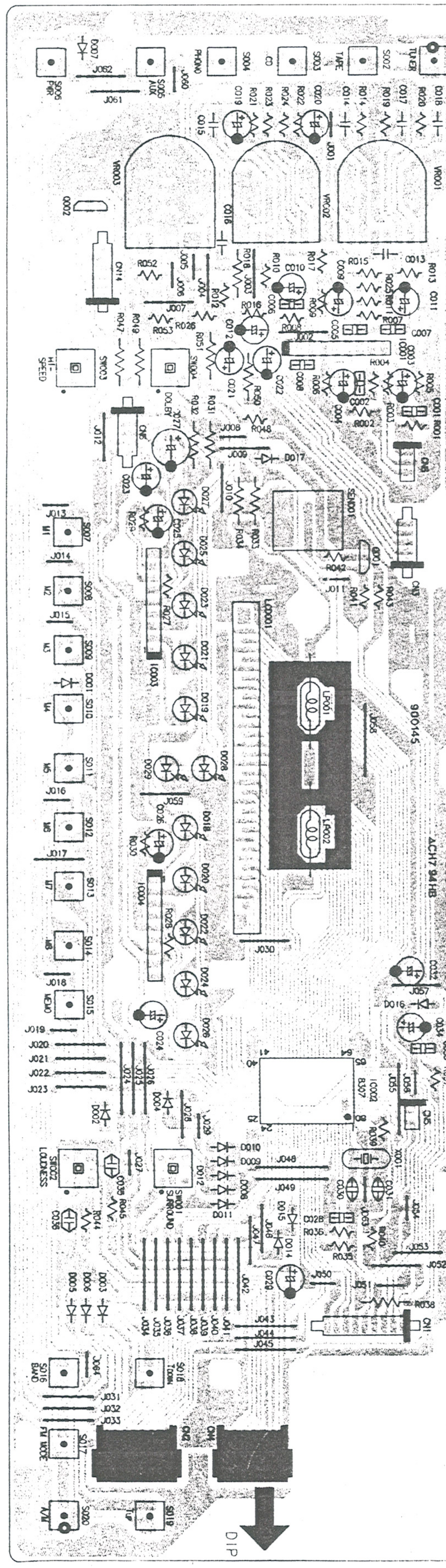

4142234120
ACH4B 94V0
F502
T2A/250V
F501 T2A/250V
4142234110
ACH4B 94V0

Leiterbahnseite
Solder side

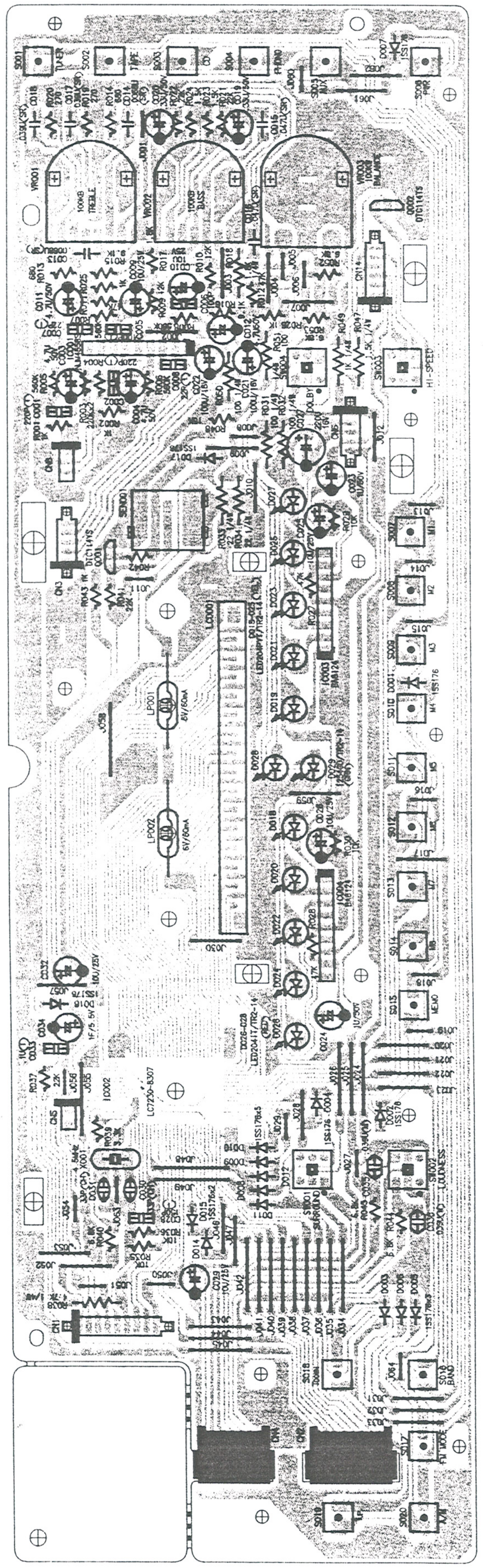

F502
T2A/250V
F501 T2A/250V

Frontplatine
Front P.C.B.

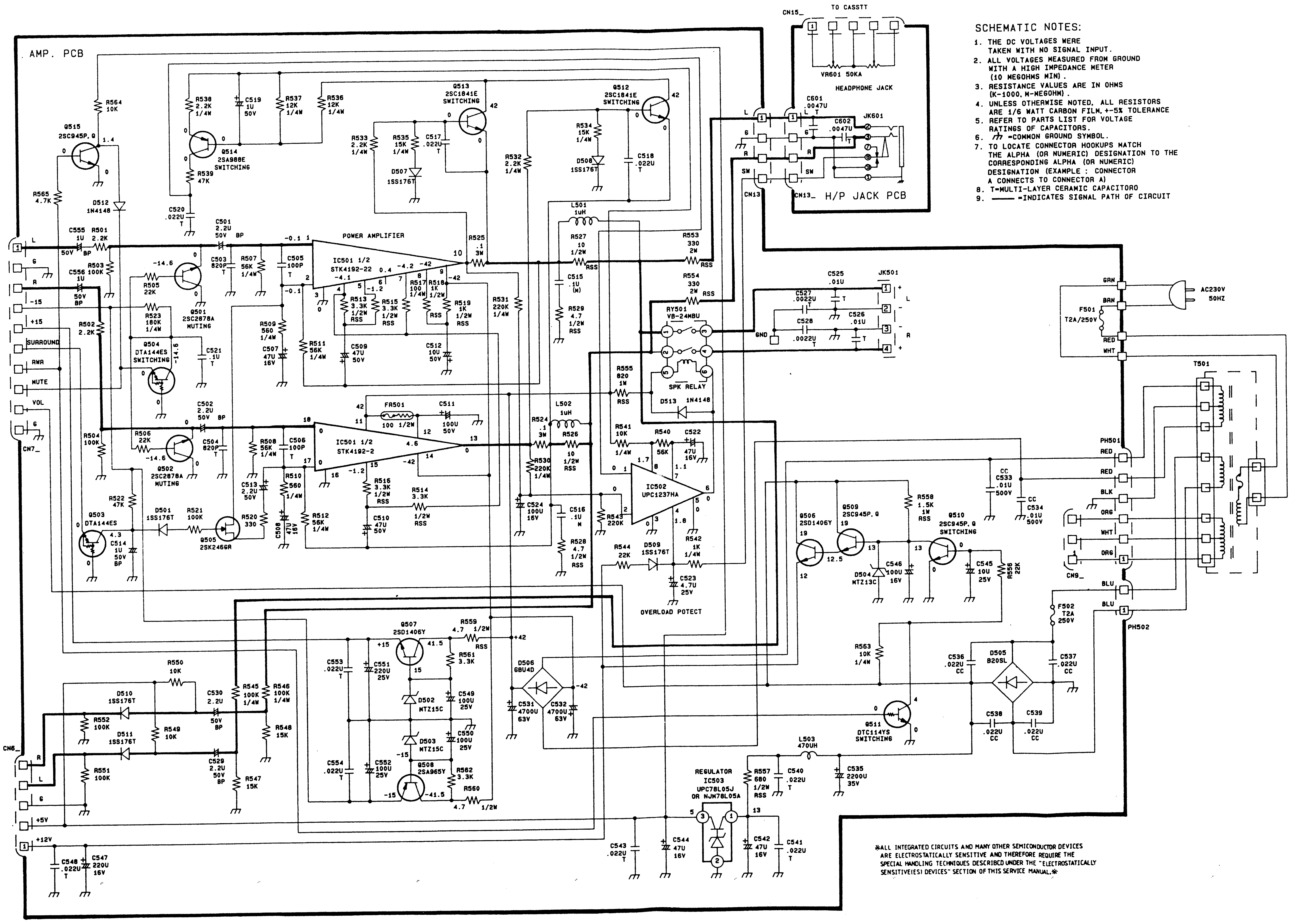
Bestückungsseite
Component side


4141233700
ACH7 94HB
D/P

Leiterbahnseite
Solder side



Schaltbild Netzteil/Endstufe
Circuit diagram amplifier


AMP. PCB
TO CASSTT
CN15
VR601 50KA
HEADPHONE JACK
C601 .0047U
C602 .0047U
JK601
CN13
H/P JACK PCB
POWER AMPLIFIER
IC501 1/2 STK4192-22
IC501 1/2 STK4192-2
IC502 UPC1237HA
OVERLOAD POTECT
RY501 VB-24MBU
SPK RELAY
D513 1N4148
JK501
GND
AC230V 50HZ
F501 T2A/250V
GRN
BRN
RED
WHT
T501
PH501
BLK
ORG
BLU
CN9
F502 T2A 250V
PH502
Q501 2SC2878A MUTING
Q502 2SC2878A MUTING
Q503 DTA144ES
Q504 DTA144ES SWITCHING
Q505 2SK2466A
Q506 2SD1406Y
Q507 2SD1406Y
Q508 2SA965Y
Q509 2SC945P, Q
Q510 2SC945P, Q SWITCHING
Q511 DTC114YS SWITCHING
Q512 2SC1841E SWITCHING
Q513 2SC1841E SWITCHING
Q514 2SA988E SWITCHING
Q515 2SC945P, Q
D502 MTZ15C
D503 MTZ15C
D504 MTZ13C
D505 B20SL
D506 6BU4D
REGULATOR IC503 UPC78L05J OR NJM78L05A
L501 1uH
L502 1uH
L503 470UH
FR501 100 1/2W
C531 4700U 63V
C532 4700U 63V
C535 2200U 35V
CN6
CN7
L
R
-15
+15
SURROUND
AWA
MUTE
VOL
+5V
+12V
+42
-42

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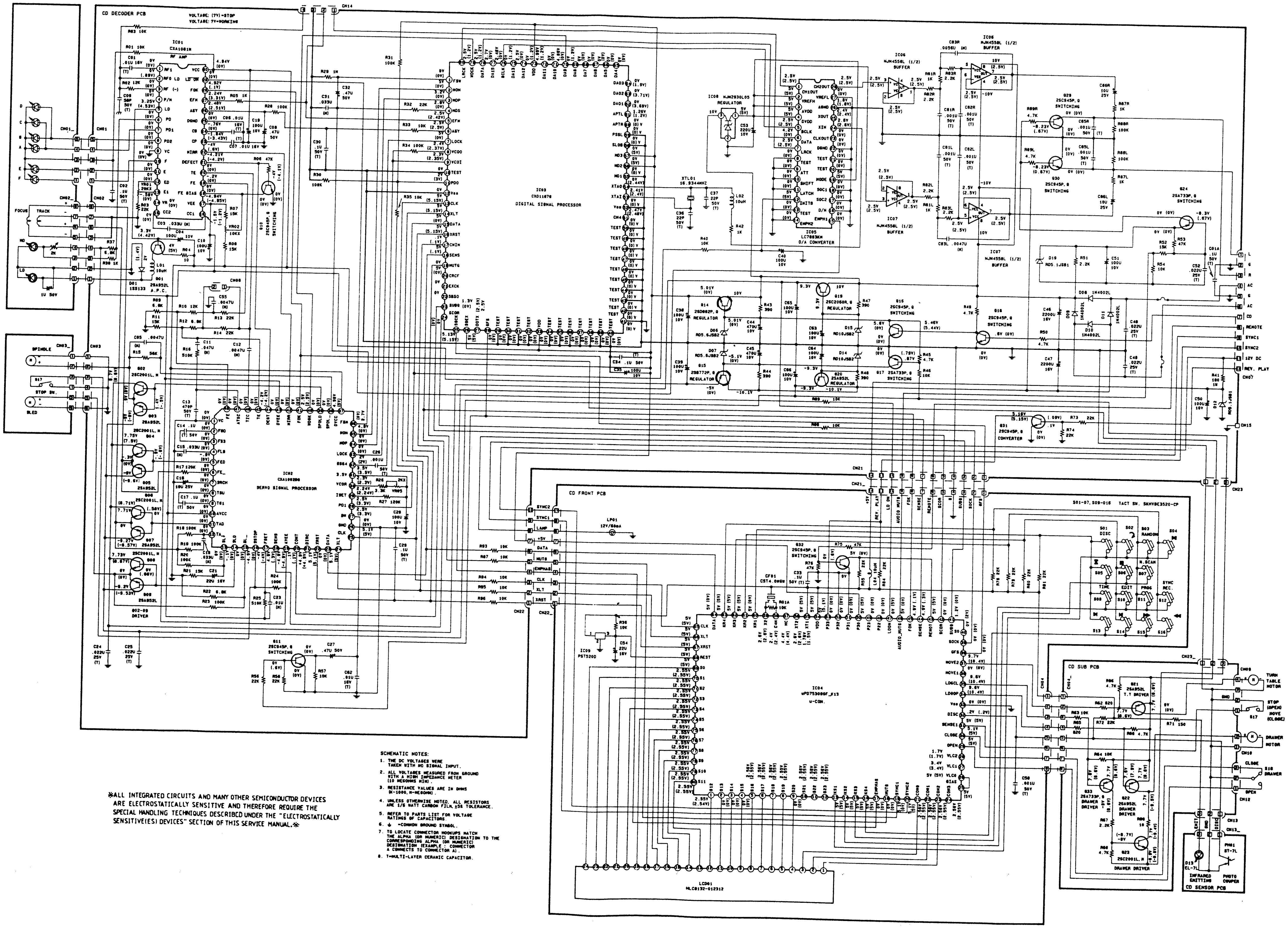
Schaltbild CD-Spieler
Circuit diagram CD player


CD DECODER PCB
VOLTAGE: (7V)-STOP
VOLTAGE: 7V-WORKING
IC01 CXA1081M RF AMP
IC02 CXA1082BQ SERVO SIGNAL PROCESSOR
IC03 CXD1167Q DIGITAL SIGNAL PROCESSOR
IC05 LC7883KM D/A CONVERTER
IC06 NJM4558L (1/2) BUFFER
IC07 NJM4558L (1/2) BUFFER
IC08 NJM2930L05 REGULATOR
XTL01 16.9344MHZ
FOCUS
TRACK
SPINDLE
SLED
STOP SW.
CD FRONT PCB
IC04 uPD75306GF_X13 u-COM.
IC09 PST520D
LCD01 MLC0132-012312
S01-07, S09-016 TACT SW. SKHVBE3520-CP
CD SUB PCB
TURN TABLE MOTOR
DRAWER MOTOR
CD SENSOR PCB
INFRARED EMITTING
PHOTO COUPLER

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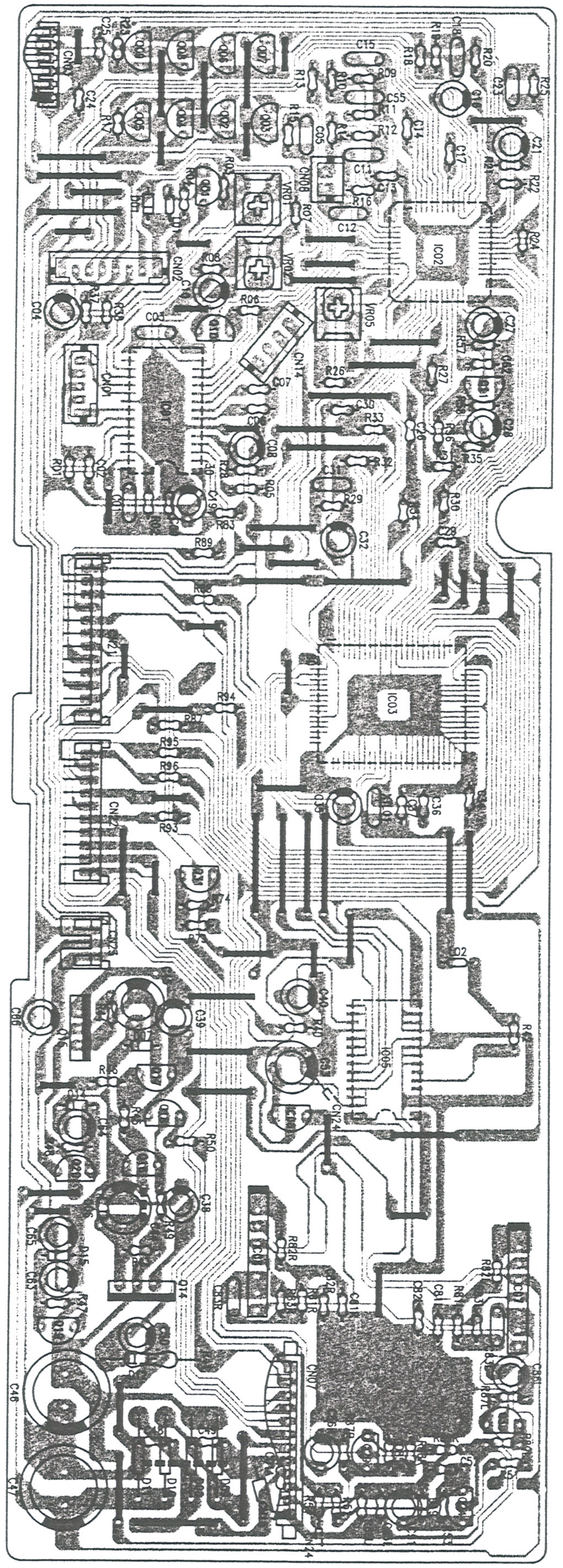
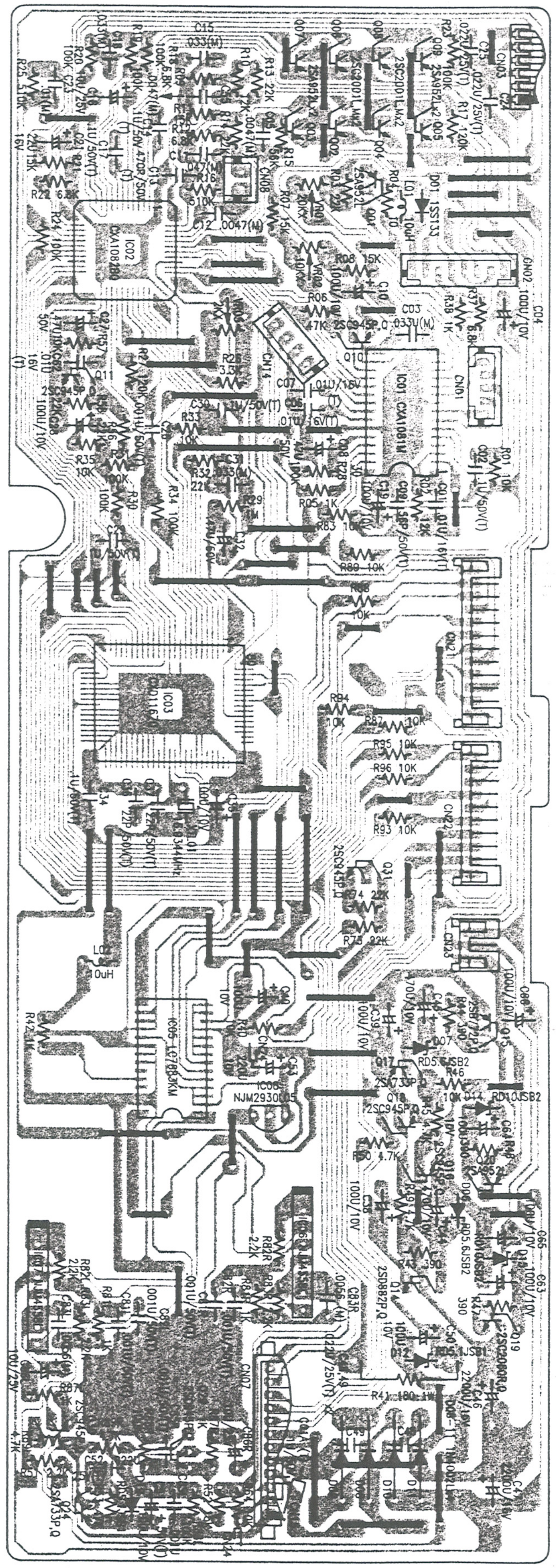
Hauptplatine CD
CD decoder P.C.B.

Bestückungsseite
Component side

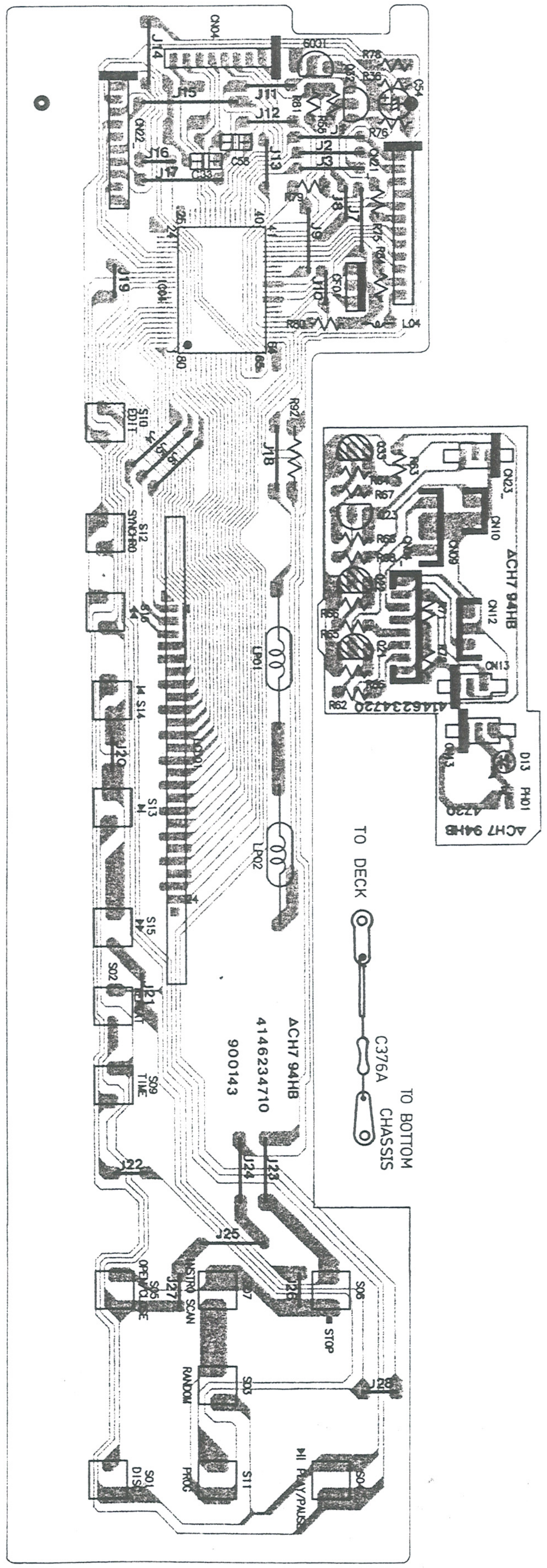


Leiterbahnseite
Solder side

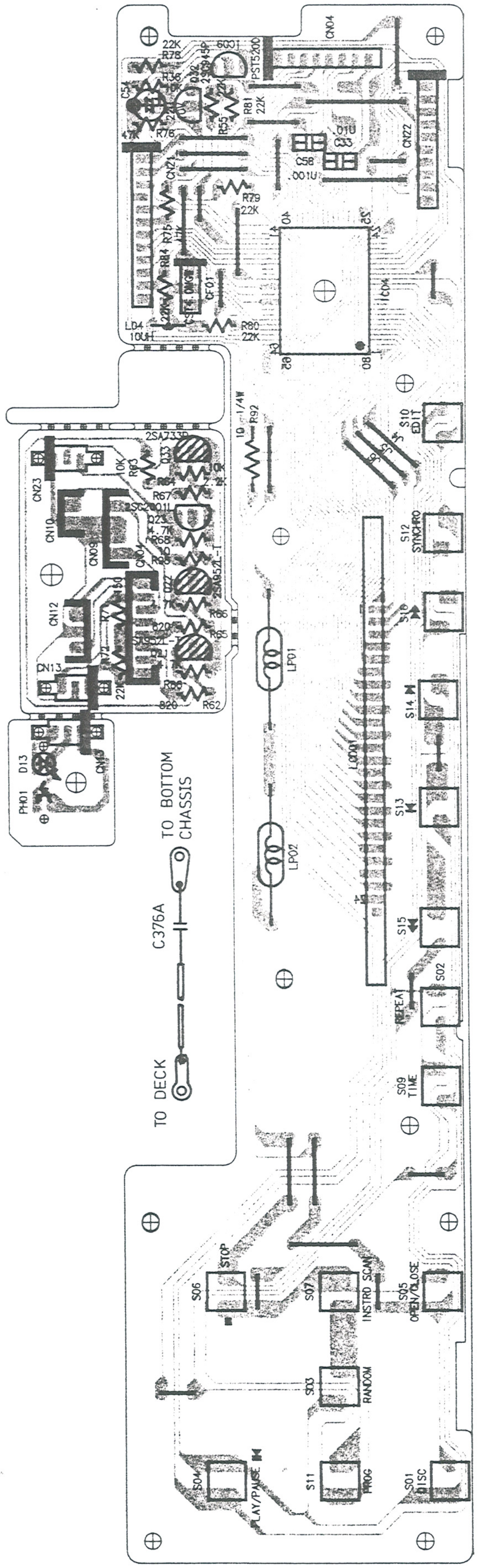

IC03
IC05
NJM2930L05

CD Bedienteil-, Displayplatine
CD front P.C.B.

Bestückungsseite
Component side

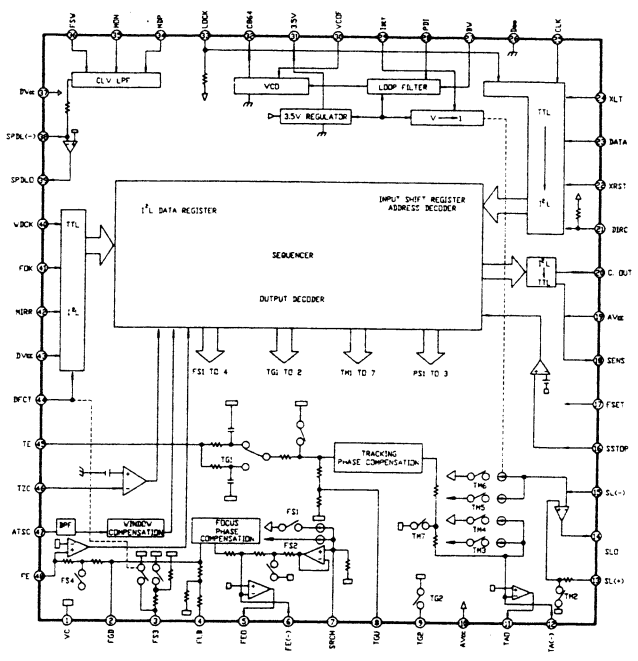

TO DECK
C376A
TO BOTTOM CHASSIS
ΔCH7 94HB
414623471O
900143
LP01
LP02

Leiterbahnseite
Solder side

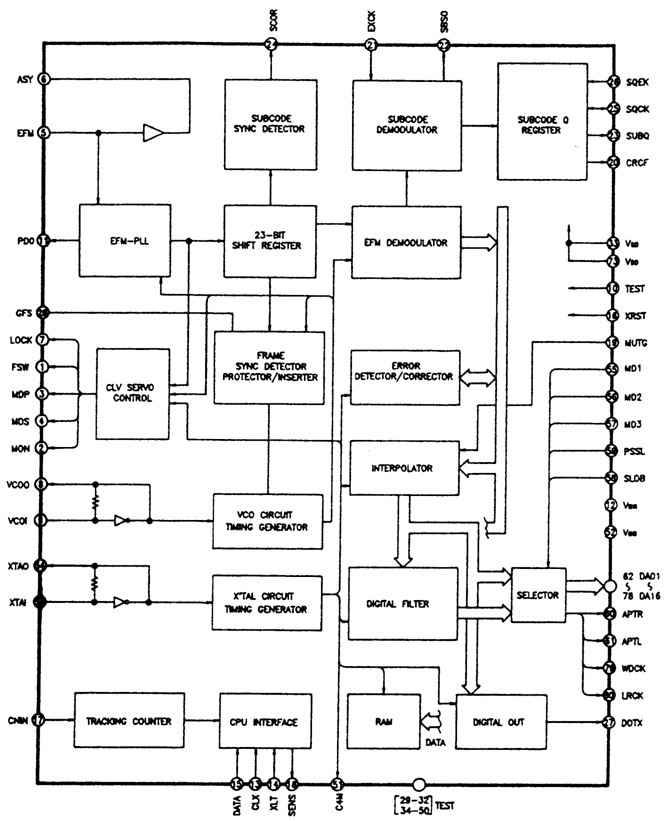

TO DECK
C376A
TO BOTTOM CHASSIS
LP01
LP02

IC Blockschaltbilder
IC block diagrams

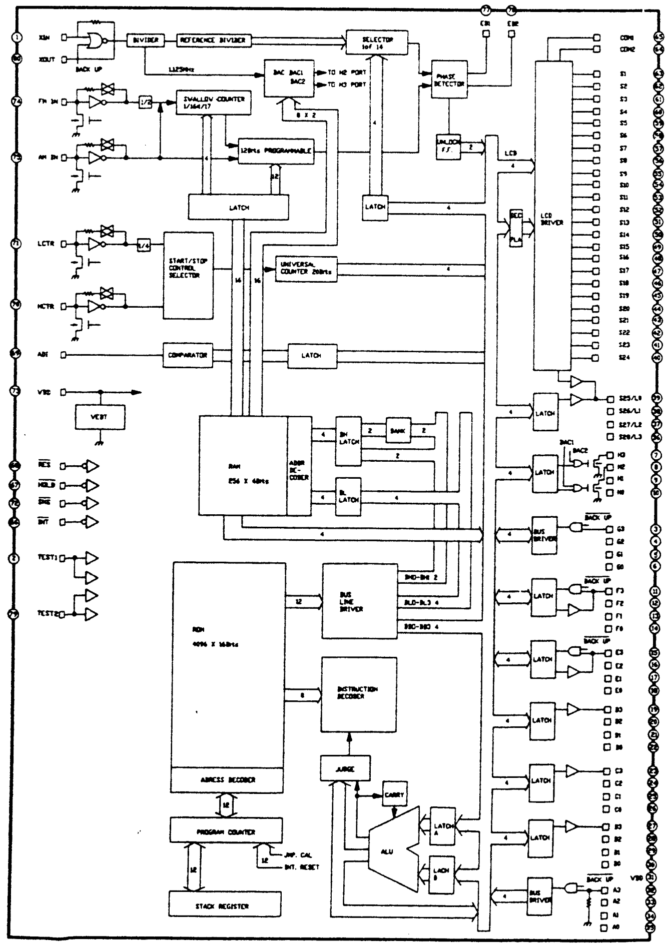
IC 02 CXA 1082 BQ



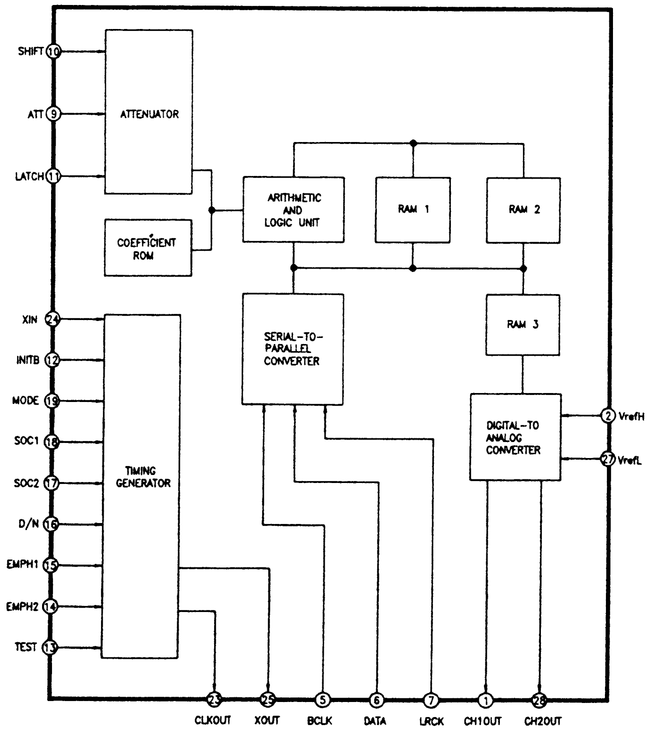
IC 03 CXD 1167 Q


SCOR
EXCK
SBSO
ASY
EFM
PDO
GFS
LOCK
FSW
MDP
MDS
MON
VCOO
VCOI
XTAO
XTAI
CNIN
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q REGISTER
EFM-PLL
23-BIT SHIFT REGISTER
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR/INSERTER
CLV SERVO CONTROL
ERROR DETECTOR/CORRECTOR
INTERPOLATOR
VCO CIRCUIT TIMING GENERATOR
X'TAL CIRCUIT TIMING GENERATOR
DIGITAL FILTER
SELECTOR
TRACKING COUNTER
CPU INTERFACE
RAM
DIGITAL OUT
DATA
SQEK
SQCK
SUBQ
CRCF
TEST
XRST
MUTG
MD1
MD2
MD3
PSSL
SLOB
APTR
APTL
WDCK
LRCK
DOTX
DATA
CLK
XLT
SENS
C4M
TEST

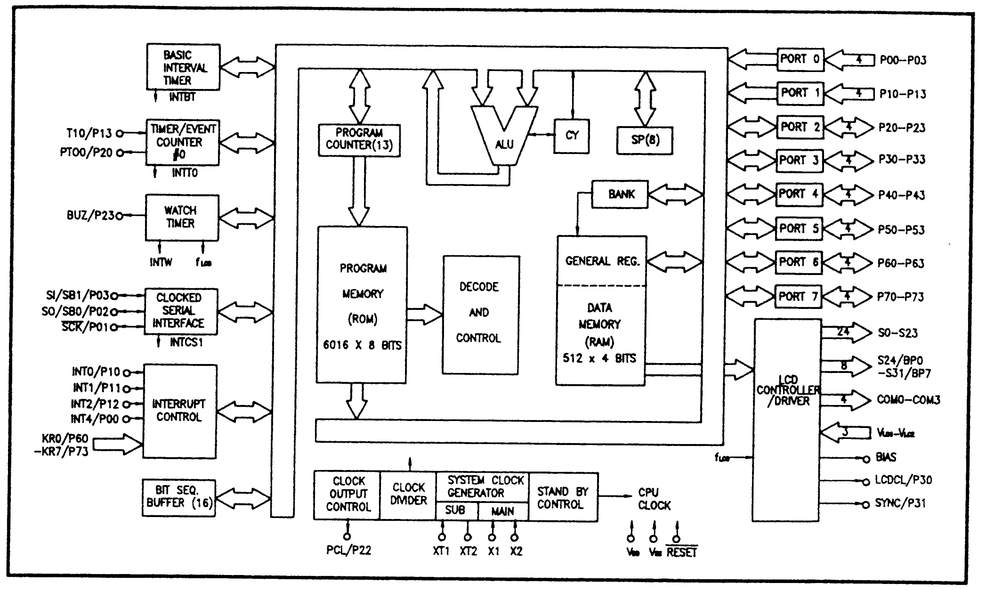
IC 002 LC 7230



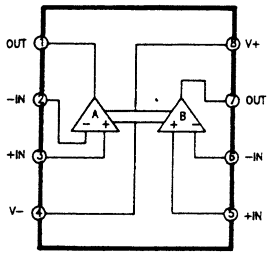
IC 05 LC 7883


SHIFT
ATT
LATCH
XIN
INITB
MODE
SOC1
SOC2
D/N
EMPH1
EMPH2
TEST
ATTENUATOR
COEFFICIENT ROM
ARITHMETIC AND LOGIC UNIT
RAM 1
RAM 2
SERIAL-TO-PARALLEL CONVERTER
RAM 3
DIGITAL-TO ANALOG CONVERTER
TIMING GENERATOR
VrefH
VrefL
CLKOUT
XOUT
BCLK
DATA
LRCK
CH1OUT
CH2OUT

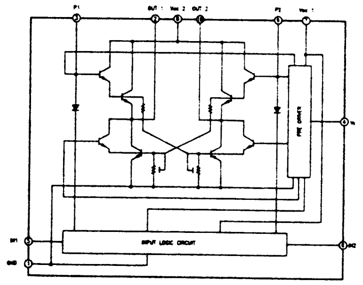
IC 04 UPD 75308 GF


BASIC INTERVAL TIMER
INTBT
T10/P13
PTO0/P20
TIMER/EVENT COUNTER
INTT0
BUZ/P23
WATCH TIMER
INTW
SI/SB1/P03
SO/SB0/P02
SCK/P01
CLOCKED SERIAL INTERFACE
INTCS1
INT0/P10
INT1/P11
INT2/P12
INT4/P00
INTERRUPT CONTROL
KR0/P60
-KR7/P73
BIT SEQ. BUFFER (16)
PROGRAM COUNTER(13)
ALU
CY
SP(8)
BANK
PROGRAM MEMORY (ROM) 6016 X 8 BITS
DECODE AND CONTROL
GENERAL REG.
DATA MEMORY (RAM) 512 x 4 BITS
CLOCK OUTPUT CONTROL
CLOCK DIVIDER
SYSTEM CLOCK GENERATOR
SUB
MAIN
STAND BY CONTROL
CPU CLOCK
PCL/P22
XT1
XT2
X1
X2
RESET
PORT 0
PORT 1
PORT 2
PORT 3
PORT 4
PORT 5
PORT 6
PORT 7
P00-P03
P10-P13
P20-P23
P30-P33
P40-P43
P50-P53
P60-P63
P70-P73
LCD CONTROLLER /DRIVER
S0-S23
S24/BP0 -S31/BP7
COM0-COM3
BIAS
LCDCL/P30
SYNC/P31

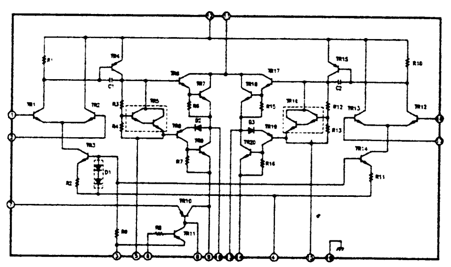
IC 06, 07 NJM 4558 L


OUT
-IN
+IN
V-
V+
OUT
-IN
+IN
A
B

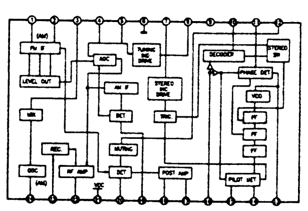
IC 203 LB 1641



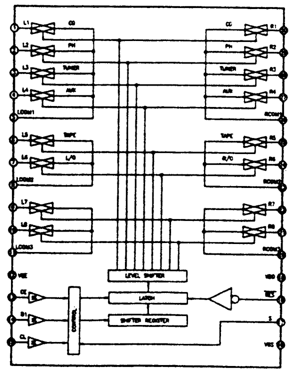
IC 501 STK 4192-2



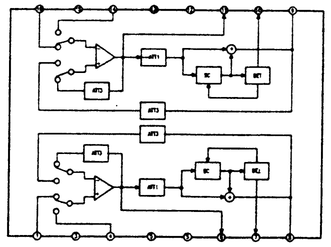
IC 101 LA 1805



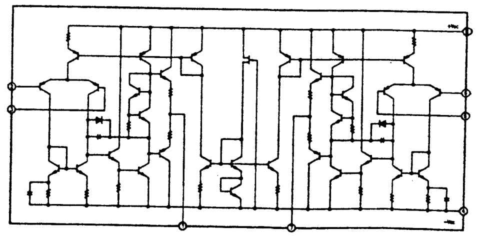
IC 202 LC 7821



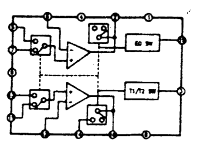
IC 402 CXA 1101 P



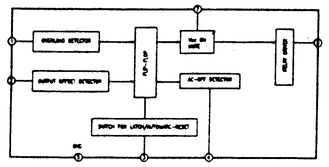
IC 401 M 5218 AL



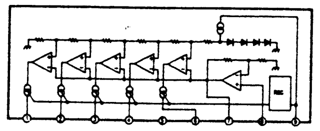
IC 301 TA-7784 P



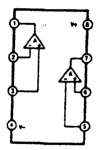
IC 502 UPC 1237 HA



IC 003, 004 BA 6124



IC 001 NJM 4558 S
IC 201 NJM 4558 DD



Abgleichanweisung Tuner
Alignment procedure tuner

Benötigte Geräte
Equipment required

1. AM signal generator.
2. FM signal generator.
3. VTVM.
4. DC volt meter.

Notes:

1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator.)
2. Volume control at maximum, balance and tone control, at mechanical center.
3. Standard modulation is 400 Hz at 30% amplitude for AM, 1000Hz at 22.5kHz deviation for FM.
4. Connect 8 ohm load across speaker jack.

MW ZF Abgleich/MW IF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
MW IF sweep generator connected to a standard radiating loop	Sweep centered 450 kHz	Oscilloscope connected to AM test point IF O/P (TP101) and GND.	Tuning to Lowest frequency	T104 (See Fig. 5)	Adjust for maximum output
	Repeat adjustment as necessary for maximum sensitivity.				

MW HF Abgleich/MW RF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
MW signal generator connected to a standard radiating loop	531 kHz (Modulated)	DC meter across TP104 and TP103 (GND.)	Lowest freq.	T102	DC Meter 1.2V±0.05V
	1602 kHz (Modulated)		Highest freq.	TC103	DC Meter 7.5V±0.05V
	Repeat adjustments as necessary to obtain frequency range.				
	603 kHz (Modulated)	VTVM across speaker jack (Using 8 ohm resistive load)	600 kHz	L101	Adjust for maximum output
	1404 kHz (Modulated)		1400 kHz	TC101	
	Repeat adjustments as necessary to minimize tracking error.				

LW HF Abgleich/LW RF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
LW signal generator connected to a standard radiating loop	153 kHz (Modulated)	DC meter across TP104 and TP103 (GND.)	Lowest freq.	T103	DC Meter 1.2V±0.05V
	281 kHz (Modulated)		Highest freq.	TC104	DC Meter 5.5V±0.05V
	Repeat adjustments as necessary to obtain frequency range.				
	164 kHz (Modulated)	VTVM across speaker jack (Using 8 ohm resistive load)	164 kHz	L102	Adjust for maximum output
	272 kHz (Modulated)		272 kHz	TC102	
	Repeat adjustments as necessary to minimize tracking error.				

FM HF Abgleich/FM RF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM signal generator connected to Ext. Ant. terminal. Matching network used.	87.5 MHz	DC meter connected to TP104 and TP103 (GND.)	Lowest freq.	NONE	DC Meter to indicate 1.6V
	107.9 MHz		Highest freq.	NONE	DC Meter to indicate 7.6V
	Repeat adjustments as necessary to obtain frequency range.				
	90 MHz (Modulated)	VTVM across speaker jack (Using 8 ohm resistive load)	90 MHz	NONE	Adjust for maximum output
	106 MHz (Modulated)		106 MHz	NONE	
	Repeat adjustments as necessary to minimize tracking error.				

FM MPX Abgleich/FM MPX Adjustment

Benötigte Geräte
Equipment required:

1. Signal generator ....Modulation rate by pilot signal..................................10%
   Modulation rate by main signal (L + R)...........................45%
   Modulation rate by pilot signal (L + R)..........................45%
2. Frequency counter, Dummy antenna, VTVM.
   Band switch to FM. Tuning approx, 98MHz.

Item	Signal Source	Signal Generator Frequency	Alignment Indicator	Dial Setting	Tuning Adjustment	Remarks
Adjustment of pilot Signal	FM signal generator connected to FM Ext. Ant. terminal Matching network used. Modulation OFF.	98 MHz (40KHz DEV.)	Frequency counter through Buffer and connected to TP102 & GND.	98 MHz	SFR101 & SFR102	Measure pilot signal only and adjust for 76 kHz ± 200 Hz

FM ZF Abgleich/FM IF Adjustment

Signal Source	Signal Generator	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM IF sweep generator connected to FM Ext. Ant Matching network used.	Sweep centered 10.7 MHz	Oscilloscope connected to IF test point IF O/P TP101 and GND.	98MHz	T105	Adjust for maximum amplitude and proper linearity between ± 100kHz markers.

Abgleich Verzerrung/Distortion Adjustment

Item	Signal Source	Alignment Indicator	Adjustment	Remarks
Adjustment of Distortion	98MHz DEV. 22.5KHz 60dB Signal I/P from FM ANT. Terminal	Distortion Meter connected to speaker terminals	IFT (Front END)	Distortion under 0.5%

Abgleichanweisung Cassette
Alignment procedure tape

Abgleich Bandgeschwindigkeit/Tape Speed Adjustment

Normal Speed Adjustment

Notes: 1. Use TEAC TEST TAPE, MTT-111
(3 kHz signals are recorded on the tape.)

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	Normal speed adj.	Frequency counter. connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the TEST TAPE MTT-111 A side mecha.	Turn the SFR305 on the cassette board.	2940Hz-3090Hz	TP307 & GND. Open
2	Normal speed adj.	Frequency counter. connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the TEST TAPE MTT-111 B side mecha.	NONE	Check 2940Hz-3060Hz	TP307 & GND. Open (See Fig. 5)

High Speed Adjustment

Notes: 1. Set the DUBBING switch..............................ON
2. Set the NORMAL/HIGH switch.......................HIGH

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	High speed adj.	Frequency counter. connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the Test Tape MTT-111 A side mecha.	Turn the SFR306 on the cassette board.	5292Hz-5508Hz	TP307 & GND short
1	High speed adj.	Frequency counter. connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the Test Tape MTT-111 B side mecha.	NONE	Check 5292Hz-5508Hz	TP307 & GND short

Abgleich Wiedergabe/Playback Adjustment

Notes: 1. Before this adjustment, clean REC/P.B. head surface.
2. For this adjustment, use TEAC TEST TAPE MTT-111 and MTT-150.
3. Set the Dolby NR switch to OFF.

a-Side Mecha. Adjustment

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	REC/P.B. head adj.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the test tape MTT-114NA in " " direction.	Adjust the azimuth adjusting L side screw in Fig. 4	Max. output both channels.	After this adjustment, lock the screw with paint.
2	Playback Level adj.	Same as above	Playback the test tape MTT-150.	Adjust each SFR303 (L) and SFR304 (R), cassette board.	548 mV +-1 dB	See Fig. 5

b-Side Mecha. Adjustment

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	P.B. head adj.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L).	Playback the test tape MTT-114NA.	Adjust the azim uth adjusting screw in Fig.	Max. output both channels.	See Fig. 3
2	Playback Level adj.	Same as above.	Playback the test tape MTT-150.	Adjust each SFR301 (L) and SFR302 (R), cassette board.	548 mV +-1 dB	See Fig. 5

Abgleich Vormagnetisierung/Bias Adjustment

Note: 1. For, this adjustment, use test tape MTT-5521
2. Set the Dolby NR switch.................OFF

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	Bias frequency adj.	Frequency counter connected to TP402 (+) and TP401 (-).	1. Load the test tape MTT-5521 2. Push the REC and PLAY button 3. Beat switch at position "I".	Turn the core of L408	80KHz +-1kHz	See Fig. 5

Abgleich Vormagnetisierung/Bias Leakage Adjustment

Notes: Use test tape MTT-5521

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	Trap coil adj.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L).	MTT-5521 Push the REC and Play button.	Turn the core of L301 L-CH, and L302 R-CH. Cassette board.	Max. output both channels. (under 10mV)	

Abgleich Filter (nur Cassette A)/Filter Adjustment (a-Side Mecha. only)

Notes: 1. Dolby Switch; Hi-speed switch OFF.

Step	Subject	Input Signal	Measure Output	Setting	Adjust For	Remarks
1	19kHz Filter adj.	Feed 19 kHz from audio S.G into MIC Jack.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L)	Push the REC and Play button.	Turn the core of L401 L-CH and L402 R-CH. Min. output both channels.	See Fig. 5

Abgleich Vormagnetisierung (nur Cassette A)/Bias Current Adjustment (a-Side Mecha. only)

Notes: 1. Set tape selector in normal position.

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	Bias Current	VTVM connected to TP303 and TP304 (GND)	Teat tape MTT-5521 Push the REC and Play button.	Adjust for SFR404	O/P= 6.4mV	Normal
2	Bias Current	VTVM connected to TP301 and TP302 (GND)	Same as above	Adjust for SFR403	O/P= 6.4mV	Normal
3	Bias Current	VTVM connected to TP303 and TP304 (GND)	Teat tape MTT-5521 Push the REC and Play button.	None	Check O/P= 10mV	CrO2
4	Bias Current	VTVM connected to TP301 and TP302 (GND)	Same as above	None	Check O/P= 10mV	CrO2

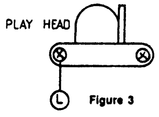


Figure 3

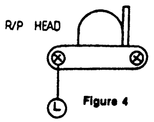


Figure 4

Abgleich A/W Level/R/P Level Adjustment

Notes 1. Set Dolby Switch and Hi-speed Switch OFF.

Step	Subject	Input Signal	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	R/P level adj.	f= 1kHz from audio S.G. into MIC. jack.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L)	Test tape AC-224 Push the REC and PLAY button.	Adjust for SFR401 (L) and SFR402 (R).	O/P=200mV (+-1dB)	See Fig.5
2	R/P level adj.	f= 12.5kHz from audio S.G. into MIC. jack.	VTVM connected to TP306 (R) ,TP308 (GND) & TP305 (L)	Test tape AC-224 Push the REC and PLAY button.	Adjust for SFR403 (L) and SFR404 (R).	Level of 12.5kHz= Level of 1 kHz	See Fig.5

Abgleichpunkte/Adjustment Locations

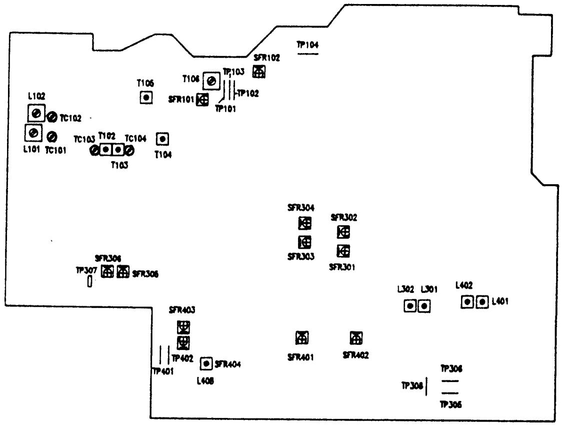
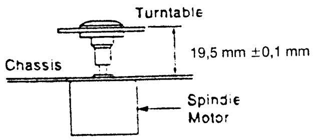


Figure 5

Antriebstellerhöhe
Diese Einstellung ist notwendig, wenn der Antriebstellermotor gewechselt wird.
Der Antriebsteller muß so befestigt werden, daß der Abstand zwischen Oberkante Teller und Chassis 19,5 mm ± 0,1 mm beträgt.

Adjustment of turntable height
This adjustment must be performed when the Spindle Motor is replaced.
The turntable should be mounted so that its upper surface is 19.5 mm ± 0.1 mm above the surface of the chassis.



Abgleichpunkte
Adjustment points

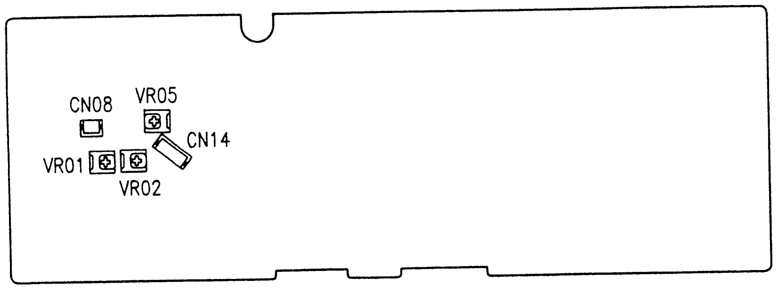


Bild 1
Picture 1

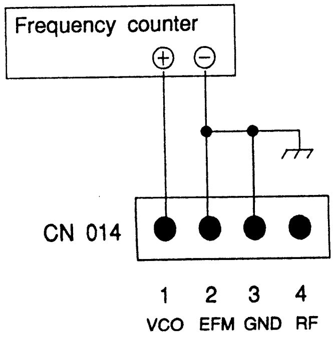
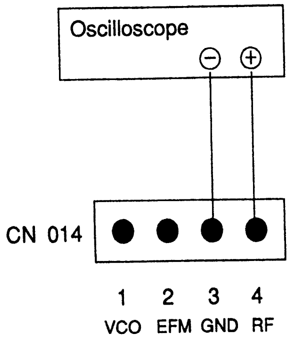


Bild 2
Picture 2



Ersatzteilliste elektrische Teile
Spare parts list electrical

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 691 00	Hauptplatine	Main P. C. B. assembly		G 0
57 692 00	Frontplatine	Front P. C. B. assembly		F 0
57 693 00	Netzteil-, Endstufenplatine	Amplifier P. C. B. assembly		F 3
26 098 00	IC NJM 4558 S	IC NJM 4558 S	IC 001	A 9
66 605 00	IC LC 7230–8307	IC LC 7230–8307	IC 002	C 9
14 351 00	IC BA 6124	IC BA 6124	IC 003–004	A 8
60 273 00	IC LA 1805	IC LA 1805	IC 101	B 5
12 882 00	IC NJM 4558 DD	IC NJM 4558 DD	IC 201	B 1
57 695 00	IC LC 7821	IC LC 7821	IC 202	B 1
46 829 00	IC LB 1641	IC LB 1641	IC 203	B 2
48 363 00	IC TA 7784 P	IC TA 7784 P	IC 301	B 0
60 042 00	IC BA 15218 N	IC BA 15218 N	IC 401	A 6
66 766 00	IC CXA 1101 P	IC CXA 1101 P	IC 402	B 5
57 696 00	IC STK 4192-2	IC STK 4192-2	IC 501	D 4
57 697 00	IC UPC 1237 HA	IC UPC 1237 HA	IC 502	A 3
57 698 00	IC NJM 78 L 05 A	IC NJM 78 L 05 A	IC 503	A 0
57 699 00	Transistor DTC 114 YS	Transistor DTC 114 YS	Q 001	A 0
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 002	A 0
13 757 00	Transistor 2 SC 1675 L	Transistor 2 SC 1675 L	Q 101	A 7
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 102	A 2
57 701 00	Transistor 2 SK 161 GR	Transistor 2 SK 161 GR	Q 103	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 104	A 6
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 105	A 2
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 106	A 6
34 691 00	Transistor 2 SC 2878 A	Transistor 2 SC 2878 A	Q 107	A 6
57 702 00	Transistor DTA 124 ES	Transistor DTA 124 ES	Q 108	A 0
37 406 00	Transistor DTC 124 ES	Transistor DTC 124 ES	Q 109	A 3
13 757 00	Transistor 2 SC 1675 L	Transistor 2 SC 1675 L	Q 110	A 7
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 111	A 6
13 757 00	Transistor 2 SC 1675 L	Transistor 2 SC 1675 L	Q 112–113	A 7
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 114–115	A 6
57 702 00	Transistor DTA 124 ES	Transistor DTA 124 ES	Q 116–117	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 201–209	A 6
32 762 00	Transistor DTC 114 ES	Transistor DTC 114 ES	Q 301–303	A 6
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 304–314	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 315	A 6
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 316	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 317–318	A 6
32 762 00	Transistor DTC 114 ES	Transistor DTC 114 ES	Q 319	A 6
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 320	A 4
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 321	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 322–324	A 6
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 325	A 4
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 330–331	A 6
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 332	A 4
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 333–334	A 6
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 361	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 401–402	A 6
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 403–404	A 0
32 763 00	Transistor DTA 144 ES	Transistor DTA 144 ES	Q 405	A 2
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 407–412	A 6
32 762 00	Transistor DTC 114 ES	Transistor DTC 114 ES	Q 413	A 6
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 414–415	A 2
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 416	A 4
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 417–418	A 6
57 703 00	Transistor 2 SC 3243 D	Transistor 2 SC 3243 D	Q 419	A 0
57 700 00	Transistor DTC 114 TS	Transistor DTC 114 TS	Q 430	A 0
34 691 00	Transistor 2 SC 2878 A	Transistor 2 SC 2878 A	Q 501–502	A 0
32 763 00	Transistor DTA 144 ES	Transistor DTA 144 ES	Q 503–504	A 6
24 959 00	Transistor 2 SK 246 GR	Transistor 2 SK 246 GR	Q 505	A 5
24 960 00	Transistor 2 SD 1406 Y	Transistor 2 SD 1406 Y	Q 506–507	A 9
57 704 00	Transistor 2 SA 965 Y	Transistor 2 SA 965 Y	Q 508	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 509–510	A 6

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 699 00	Transistor DTC 114 YS	Transistor DTC 114 YS	Q 511	A 0
57 705 00	Transistor 2 SC 1841 E	Transistor 2 SC 1841 E	Q 512–513	A 0
57 706 00	Transistor 2 SA 988 E	Transistor 2 SA 988 E	Q 514	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 516	A 6
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 001–017	A 1
57 694 00	Leuchtdiode 204 PYT gelb	LED 204 PYT yellow	D 018–025	A 0
38 603 00	Leuchtdiode 204 IT rot	LED 204 IT red	D 026–028	A 2
34 897 00	Leuchtdiode 1254 GD grün	LED 1254 GD green	D 029	A 3
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 101	A 2
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 102	A 1
40 288 00	Kapazitätsdiode KV 1236 Z 1	Diode KV 1236 Z 1	D 103	B 7
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 104	A 1
31 317 00	Zenerdiode MTZ 5,6	Zenerdiode MTZ 5.6	D 105	A 1
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 201–202	A 1
06 872 00	Zenerdiode MTZ 5,1	Zenerdiode MTZ 5.1	D 203	A 1
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 301–302	A 1
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 304	A 2
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 305–306	A 1
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 307	A 2
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 308–322	A 1
23 797 00	Zenerdiode MTZ 4,3	Zenerdiode MTZ 4.3	D 323	A 2
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 333	A 1
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 401	A 1
12 949 00	Zenerdiode MTZ 3,0	Zenerdiode MTZ 3.0	D 402	A 1
57 707 00	Diode 1 SS 142	Diode 1 SS 142	D 403	A 3
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 501	A 1
38 773 00	Zenerdiode MTZ 15	Zenerdiode MTZ 15	D 502–503	A 1
11 044 00	Zenerdiode MTZ 13	Zenerdiode MTZ 13	D 504	A 3
57 708 00	Gleichrichter B 20 SL	Rectifier B 20 SL	D 505	A 1
57 709 00	Gleichrichter GBU 4 D	Rectifier GBU 4 D	D 506	A 5
66 598 00	Diode 1 SS 176	Diode 1 SS 176	D 507–511	A 1
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 512–513	A 2
26 520 00	Leuchtdiode LTL 3218 rot	LED LTL 3218 red	D 701	A 5
65 881 00	Keramikfilter SFE 10,7 MS 3 GYM rot	Ceramic filter SFE 10.7 MS 3 GYM red	CF 101–102	A 5
57 710 00	Keramikfilter SFZ 450 G 3 L	Ceramic filter SFZ 450 G 3 L	CF 103	A 2
66 840 00	Spule MW Antenne	MW antenna coil	L 101	A 7
57 711 00	Spule LW Antenne	LW antenna coil	L 102	A 2
57 712 00	Filter Falle TWS-358-739	Trap filter TWS-358-739	L 301–302	A 4
57 713 00	Spule Falle MPX TWS-358-682	MPX trap coil TWS-358-682	L 401–402	A 4
57 714 00	Spule Falle	Trap coil	L 406–407	A 1
57 715 00	Spule Bias Oszillator TWS-358-639	Bias oscillator coil TWS-358-639	L 408	A 1
66 848 00	Spule MW Oszillator	MW oscillator coil	T 102	A 3
57 716 00	Spule LW Oszillator	LW oscillator coil	T 103	A 0
66 849 00	ZF-Übertrager AM	AM IFT	T 104	A 4
66 847 00	ZF-Übertrager FM	FM IFT	T 105	A 4
66 850 00	Filter Tiefpaß FTZ 10 FE 01	FTZ L. P. F. 10 FE 01	T 106	B 1
66 607 00	Quarz 4,5 MHz	Crystal 4.5 MHz	X 001	B 1
57 717 00	Drehwi 100 K × 2 Höhen, Tiefen	Variable resistor 100 K × 2 Treble, Bass	VR 001–002	A 4
57 718 00	Drehwi 100 K Balance	Variable resistor 100 K Balance	VR 003	A 3
57 719 00	Drehwi 50 K × 2 (Motor) Lautst.	Variable resistor 50 K × 2 Volume	VR 201	C 4
57 720 00	Drehwi 50 K Mic Mix	Variable resistor 50 K Mic Mix	VR 202	A 1
57 721 00	Drehwi 50 K Aussteuerung	Variable resistor 50 K Rec. level	VR 601	A 3
66 834 00	Trimmpoti 5 K	Semi-fixed-resistor 5 K	SFR 101	A 3
66 832 00	Trimmpoti 10 K	Semi-fixed-resistor 10 K	SFR 102	A 3
66 832 00	Trimmpoti 10 K	Semi-fixed-resistor 10 K	SFR 301–306	A 3
66 832 00	Trimmpoti 10 K	Semi-fixed-resistor 10 K	SFR 401–402	A 3
57 743 00	Trimmpoti 200 K	Semi-fixed-resistor 200 K	SFR 403–404	A 0
38 019 00	Metox 4 R 7 ½ W	Metal resistor 4 R 7 ½ W	R 112	A 1
57 722 00	Metox 220 R ½ W	Metal resistor 200 R ½ W	R 136	A 0
57 723 00	Metox 100 R ½ W	Metal resistor 100 R ½ W	R 235–237	A 0
57 724 00	Metox 1 K ½ W	Metal resistor 1 K ½ W	R 270	A 0
57 725 00	Metox 33 R ½ W	Metal resistor 33 R ½ W	E 275	A 0
57 726 00	Metox 22 R 2 W	Metal resistor 22 R 2 W	R 459	A 0

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
38 907 00	Metox 3 K 3 ½ W	Metal resistor 3 K 3 ½ W	R 513–516	A 1
57 724 00	Metox 1 K ½ W	Metal resistor 1 K ½ W	R 518–519	A 0
57 728 00	Zementwiderstand R 1 3 W	Cement resistor R 1 3 W	R 524–525	A 0
57 729 00	Metox 10 R ½ W	Metal resistor 10 R ½ W	R 526–527	A 0
38 019 00	Metox 4 R 7 ½ W	Metal resistor 4 R 7 ½ W	R 528–529	A 1
57 727 00	Metox 330 R 2 W	Metal resistor 330 R 2 W	R 553–554	A 0
57 730 00	Metox 820 R 1 W	Metal resistor 820 R 1 W	R 555	A 0
57 731 00	Metox 680 R ½ W	Metal resistor 680 R ½ W	R 557	A 0
60 048 00	Metox 1 K 5 1 W	Metal resistor 1 K 5 1 W	R 558	A 1
38 019 00	Metox 4 R 7 ½ W	Metal resistor 4 R 7 ½ W	R 559–560	A 1
60 377 00	Sicherungswiderstand 10 R ½ W	Fuse resistor 10 R ½ W	FR 501	A 4
40 233 00	Trimmkondensator 10 pF	Trimmer capacitor 10 pF	TC 101	A 5
60 287 00	Trimmkondensator 30 pF	Trimmer capacitor 30 pF	TC 102	A 4
24 824 00	Trimmkondensator 20 pF	Trimmer capacitor 20 pF	TC 103	A 3
60 287 00	Trimmkondensator 30 pF	Trimmer capacitor 30 pF	TC 104	A 4
57 732 00	Elko 0,1 µF Gold (Senderspeicher)	Elko 0.1 µF Gold	C 034	A 4
66 851 00	Taster SKHVBH 3920-CP	Tact switch	div.	A 2
57 733 00	Druckschalter Front SEA 12 MC 001-CP	Push switch	SW 001–004	A 2
57 734 00	Druckschalter Voice cut TTL-ST-S	Push switch	SW 201	A 0
57 735 00	Schiewbeschalter Beat cut HTSS-12 F 23	Slide Switch	SW 401	A 0
66 853 00	Antennenbuchse	Antenna terminal	JK 101	B 2
57 736 00	Cinchbuchse	RCA jack	JK 201	A 0
57 737 00	Anschlußklemmen Lautsprecher	Speaker terminal	JK 501	A 2
57 738 00	Klinkenbuchse Kopfhörer	Headphone jack	JK 601	A 1
57 739 00	Klinkenbuchse Mikrofon	Mic jack	HP 201	A 1
57 740 00	Relais A/W OVR-SH-312 L	Relay OVR-SH-212 L	RY 401	B 3
57 741 00	Relais Lautspr. VB-24 MBU	Relay Speaker VB-24 MBU	RY 501	B 5
01 703 00	IEC Sicherung T 2 A/250 V	Fuse T 2 A/250 V	F 501–502	A 1
57 742 00	Netztrafo EI-86	Power transformer EI-86	T 501	E 1
66 857 00	LCD Display Tuner HLC 9861-012212	Display tuner	LCD 001	C 9
66 858 00	Lampe 6 V/60 mA	Lamp 6 V/60 mA	LP 001–002	A 3
57 762 00	IR Empfänger LTM-8834 P	Remote receiver LTM-8834 P	E 18	A 9
66 856 00	Tuner UKW FE 415–G 11 B	FM front end FE 415–G 11 B	E 22	D 4

Abgleichanweisung CD Spieler

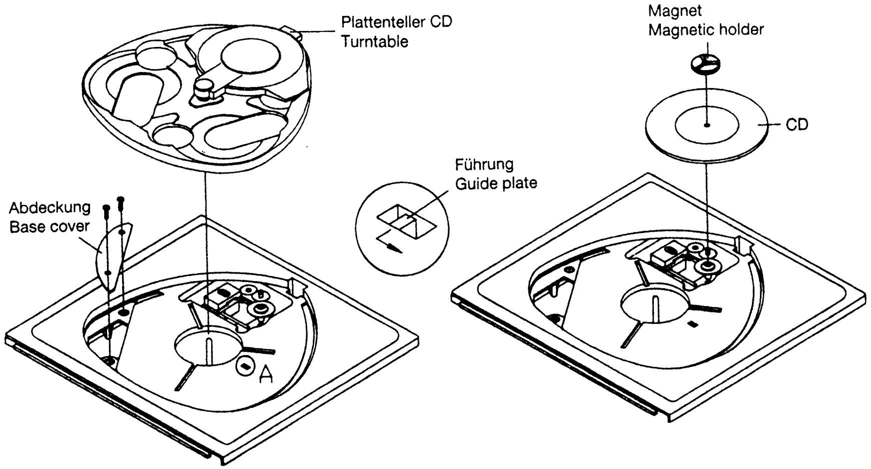
Vor dem Abgleich sind folgende Punkte durchzuführen:

- Entfernen des Plattentellers, indem die Führung nach rechts geschoben wird.
- Entfernen der Abdeckung durch Lösen der beiden Schrauben.

Alignment procedure CD player

The following steps should be performed before adjustment procedure:

- Remove the turntable by sliding the guide plate outward.
- Disassemble the base cover by removing 2 screws.



Benötigte Meßgeräte:
- Frequenzzähler
- Test CD Philips 5A oder Sony YEDS 18
- Oszilloskop

Frequenzabgleich (siehe Bild 1)
1. Testpunkt EFM mit Masse verbinden.
2. Frequenzzähler an Testpunkt VCO und Masse anschließen.
3. Mit VR 05 auf 4,23 MHz ± 30 kHz abgleichen.
4. Verbindung EFM mit Masse lösen.

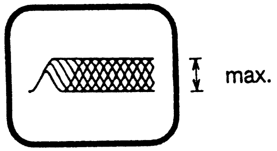
EF-Balance-Abgleich (siehe Bild 2)
1. CD-Platte einlegen und Play-Taste drücken.
2. Oszilloskop an Testpunkt RF und Masse anschließen.
3. HF-Signal mit VR 01 und VR 02 auf Maximum abgleichen **(ca. 1,1 Vss mit Test-CD Philips 5A oder 1,05 Vss mit Test CD Sony YEDS 18).**

Instruments required:
- Frequency counter
- Test disk Philips 5A or Sony YEDS 18
- Oscilloscope

VCO frequency adjustment (see picture 1)
1. Connect test point EFM to ground.
2. Connect frequency counter to test point VCO and ground.
3. Adjust VR 05 so that the value of the frequency counter comes within 4.23 MHz ± 30 kHz.
4. Disconnect EFM and ground.

EF-Balance adjustment (see picture 2)
1. Load a disk and play back.
2. Connect an oscilloscope to test point RF and ground.
3. Adjust VR 01 and VR 02 so that the HF-Signal becomes maximum **(about 1.1 Vpp with testdisk Philips 5A or 1.05 Vpp with testdisk Sony YEDS 18).**

The screen of oscilloscope



Ersatzteilliste elektrische Teile CD Spieler
Spare parts list electrical CD player

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 744 00	Hauptplatine CD	CD Decoder P. C. Board assembly		F 2
57 745 00	Bedienteil-, Displayplatine CD	CD Front P. C. Board assembly		E 1
40 757 00	IC CXA 1081 M	IC CXA 1081 M	IC 01	B 3
66 614 00	IC CXA 1082 BQ	IC CXA 1082 BQ	IC 02	B 3
66 615 00	IC CXD 1167 Q	IC CXD 1167 Q	IC 03	D 5
66 611 00	IC UPD 75308 GF-K 13	IC UPD 75308 GF-K 13	IC 04	D 2
57 746 00	IC LC 97000	IC LC 97000	IC 05	C 3
66 613 00	IC NJM 4558 L	IC NJM 4558 L	IC 06–07	A 4
57 747 00	IC NJM 2930 L 05	IC NJM 2930 L 05	IC 08	A 2
57 748 00	IC PST 520 D	IC PST 520 D	IC 09	A 3
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 01	A 5
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 02	A 2
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 03	A 5
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 04	A 2
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 05	A 5
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 06	A 2
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 07	A 5
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 08	A 2
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 09	A 5
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 10 + 11	A 6
12 948 00	Transistor 2 SD 882 P	Transistro 2 SD 882 P	Q 14	A 6
57 749 00	Transistor 2 SB 772 P	Transistor 2 SB 772 P	Q 15	A 0
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 16	A 6
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 17	A 4
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 18	A 6
29 582 00	Transistor 2 SC 2060 R	Transistor 2 SC 2060 R	Q 19	A 6
26 220 00	Transistor 2 SA 952 L	Transistor 2 SA 952 L	Q 20–22	A 4
66 595 00	Transistor 2 SC 2001 L	Transistor 2 SC 2001 L	Q 23	A 2
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 24	A 4
13 763 00	Transistor 2 SC 945 P	Transistor 2 SC 945 P	Q 29–32	A 6
26 219 00	Transistor 2 SA 733 P	Transistor 2 SA 733 P	Q 33	A 4
57 750 00	Photodiode ST-7 L	Photo diode ST-7 L	PH 01	A 0
24 750 00	Diode 1 SS 133	Diode 1 SS 133	D 01	A 4
31 317 00	Zenerdiode RD 5,6	Zenerdiode RD 5.6	D 06–07	A 1
31 729 00	Diode 1 N 4002 L	Diode 1 N 4002	D 08–11	A 2
06 872 00	Zenerdiode RD 5,1	Zenerdiode RD 5.1	D 12	A 1
57 751 00	Photodiode EL-7 L	Photo diode EL-7 L	D 13	A 0
06 131 00	Zenerdiode RD 10	Zenerdiode RD 10	D 14–15	A 2
06 872 00	Zenerdiode RD 5,1	Zenerdiode RD 5.1	D 19	A 1
66 886 00	Keramikschwingkreis 4,0 MHz	Resonator cst 4.0 MGW	CF 01	A 4
66 617 00	Quarz 16,9344 MHz	Crystal 16.9344 MHz	XTL 01	B 1
66 889 00	Trimmpoti 20 K lieg.	Semi-fixed-resistor 20 K	VR 01	A 3
66 890 00	Trimmpoti 10 K lieg.	Semi-fixed-resistor 10 K	VR 02	A 3
66 891 00	Trimmpoti 2 K lieg.	Semi-fixed-resistor 2 K	VR 05	A 3
57 752 00	Metox 180 R 1 W	Metal resistor 180 R 1 W	R 41	A 0
66 851 00	Taster	Tact switch	div.	A 2
66 884 00	Mikroschalter MLS Plattenteller	Leaf switch MLS 1	S 17	A 5
57 753 00	Mikroschalter LSC-1223-31 Slider	Leaf switch LSC-1223-31	S 18	A 1
57 754 00	LCD Display CD HLC 8132-012312	LCD Display CD	LCD 01	C 2
66 858 00	Lampe 6 V/60 mA	Lamp 6 V/60 mA	LP 01–02	A 3

Explosionsdarstellung Gehäuse
Exploded view housing

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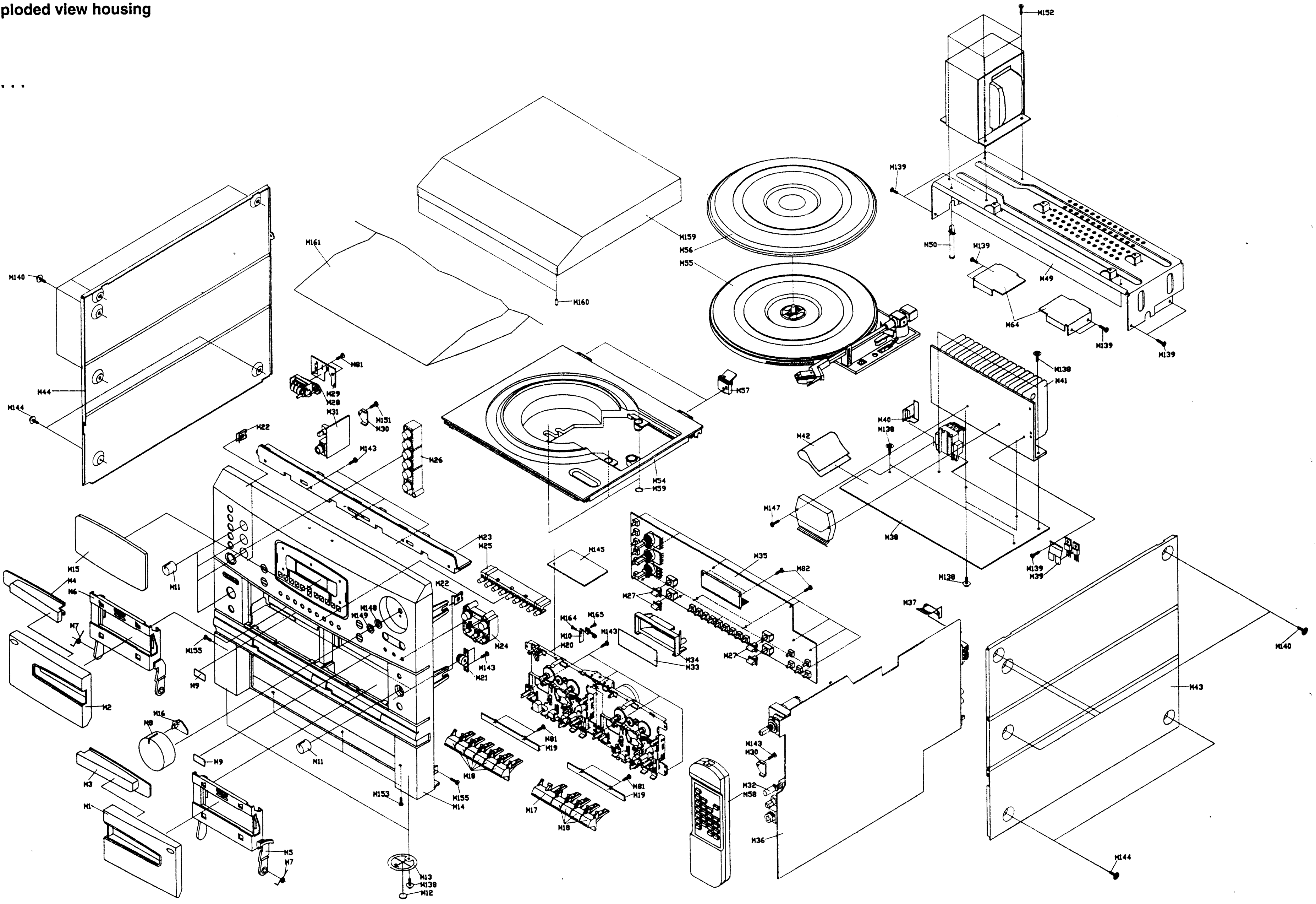
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Ersatzteilliste Gehäuse
Spare parts list housing

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 632 00	Fernbedienungsgeber RC 109/SPP 94	Remote control handset assembly	M 58	D 4
57 633 00	Frontblende	Front escutcheon	M 14	C 7
57 634 00	Befestigungsleiste Front	Bridge	M 23	A 4
57 635 00	Seitenteil rechts	Side cover right	M 43	C 0
57 636 00	Seitenteil links	Side cover left	M 44	C 0
57 637 00	Gehäuseoberteil, Zarge	Player base	M 54	B 5
57 638 00	Abdeckhaube	Dust cover	M 159	B 6
57 639 00	Dämpfgummi Haube	Dust cover stopper	M 160	A 0
57 640 00	Gehäusefuß vorne	Leg front	M 13	A 0
57 641 00	Gehäusefuß hinten	Leg back	M 47	A 6
57 642 00	Cassettenfachblende B (rechts)	Cassette door right	M 1	A 8
57 643 00	Cassettenfachblende A (links)	Cassette door left	M 2	A 8
57 644 00	Cassettenfachfenster B (rechts)	Cassette window right	M 3	A 6
57 645 00	Cassettenfachfenster A (links)	Cassette window left	M 4	A 6
57 646 00	Cassettenfach B (rechts)	Cassette holder right	M 5	A 1
57 647 00	Cassettenfach A (links)	Cassette holder left	M 6	A 1
57 648 00	Feder Cassettenfach	Spring eject	M 7	A 0
66 574 00	Klaviertaste Cassette breit	Cassette knob play	M 17	A 2
66 573 00	Klaviertaste Cassette schmal	Cassette knob	M 18	A 2
66 580 00	Dämpfer Cassettenfach	Gear damper	M 21	A 5
57 649 00	Zählwerk	Counter	E 57	A 5
57 650 00	Zählwerkriemen	Counter belt	M 28	A 0
57 651 00	Drehknopf Lautstärke (44)	Volume knob	M 8	A 0
57 652 00	Drehknopf Funktion (12)	Balance knob	M 11	A 0
57 653 00	Tastenblock Tuner, Band . . .	Tuning, band knob	M 24	A 1
57 654 00	Tastenblock Preset	Preset knob	M 25	A 0
57 655 00	Tastenblock Netz, Funktion	Function power knob	M 26	A 0
57 656 00	Taste Expand, Bass, Dolby	Bass button	M 27	A 0
57 657 00	Taste Voice cut	Voice cut knob	M 32	A 0
57 658 00	Blende Tunerdisplay	Tuner window	M 15	B 1
13 330 00	Wurfantenne FM	Antenna FM	E 12	A 4
57 659 00	Rahmenantenne AM mit Halter	Loop antenna AM with holder	E 11	B 0
57 660 00	Haubenscharnier	Hinge assembly	M 57	A 0
66 822 00	Gehäuse Tunerdisplay	LCD holder	M 34	A 3

Explosionsdarstellung Gehäuse/CD Wechsler
Exploded view housing/CD changer

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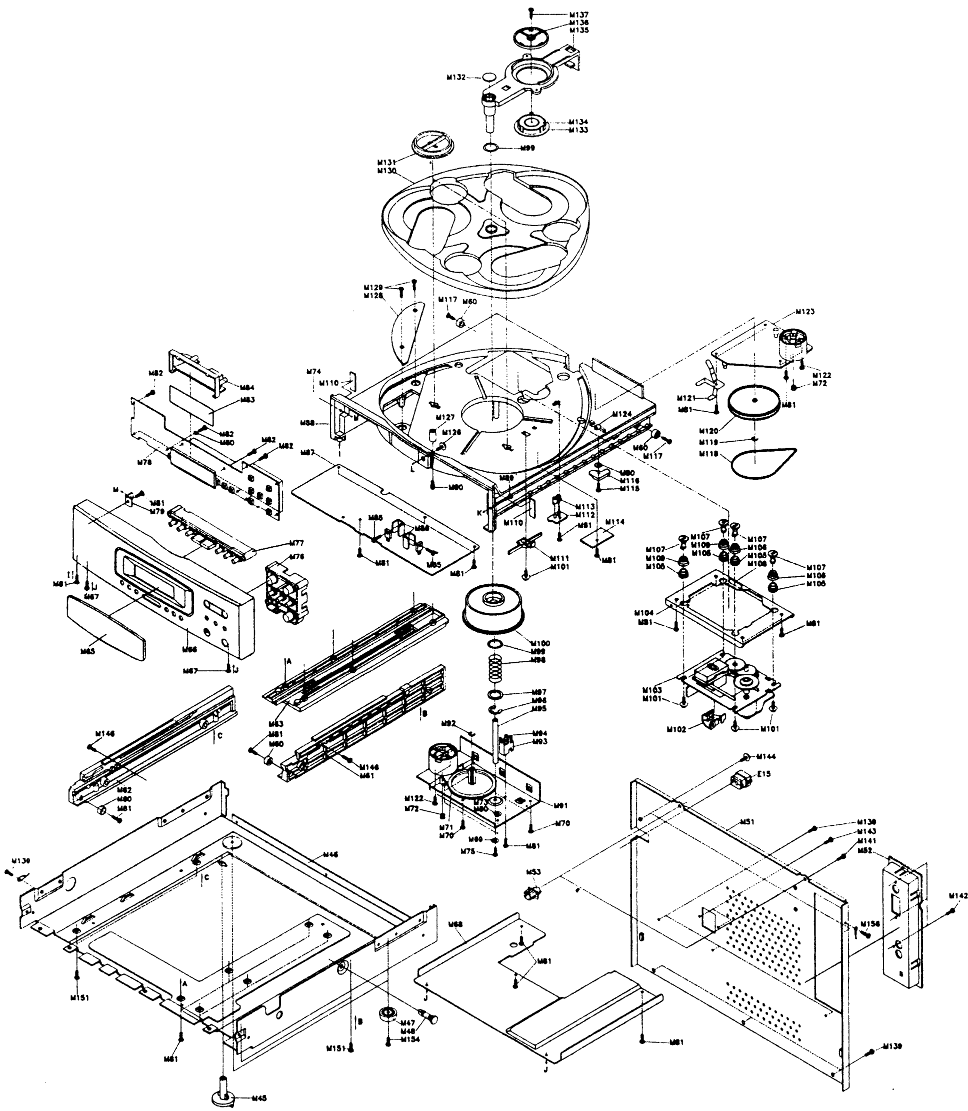
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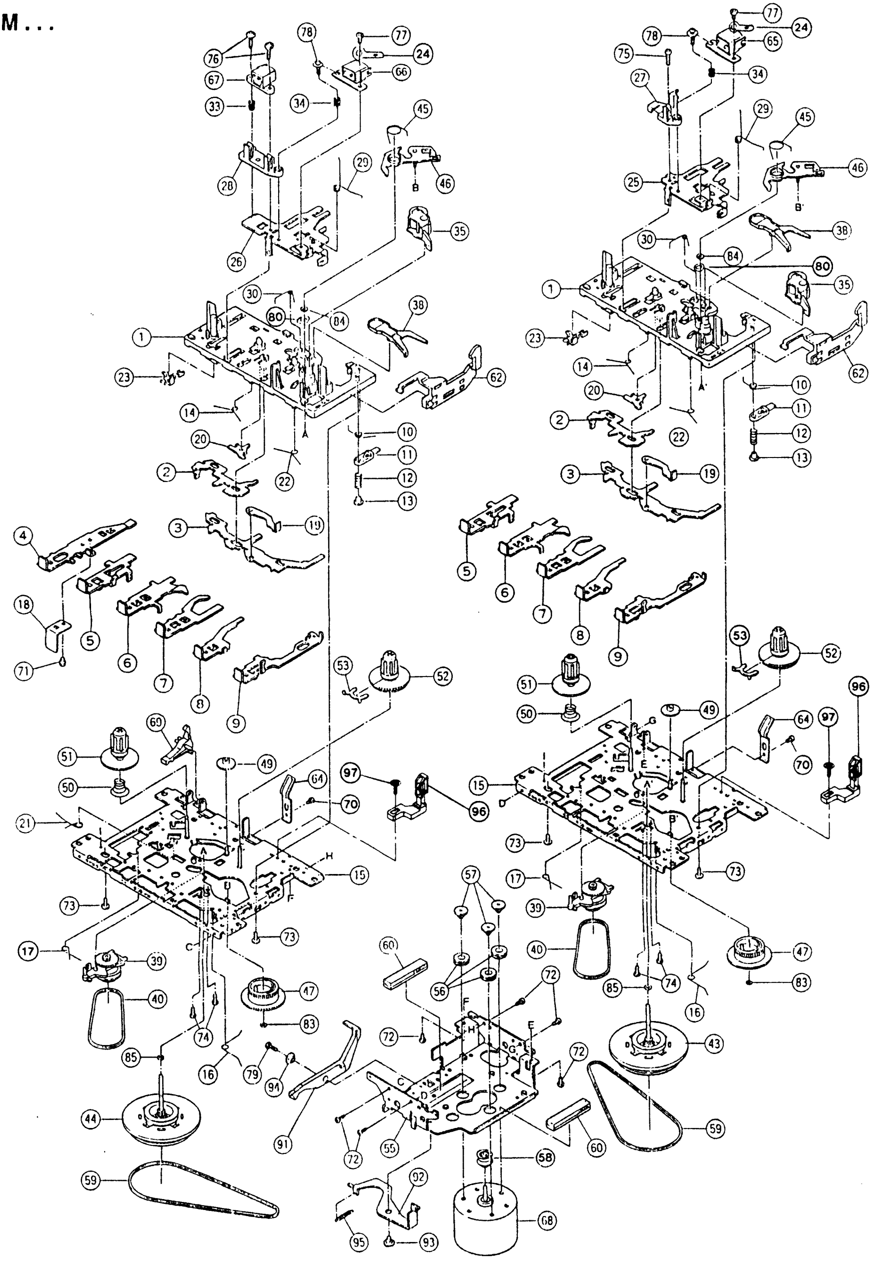
Ersatzteilliste Gehäuse/CD Wechsler
Spare parts list housing/CD changer

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 661 00	Blende CD-Display	CD window	M 65	A 8
57 662 00	Frontblende CD-Wechsler	CD panel	M 66	B 7
57 663 00	Tastenblock CD stop, play	CD knob stop/play	M 76	A 1
57 664 00	Tastenblock CD skip, edit	CD knob skip, edit	M 77	A 1
57 665 00	Gehäuse CD-Wechsler	Changer base	M 88	B 5
57 666 00	Riemen Plattenteller	Belt turntable	M 71	A 0
57 667 00	Pulley	Pulley	M 72	A 0
66 624 00	Motor Plattenteller	Motor turntable	E 16	B 9
57 669 00	Antriebsrad	Wheel	M 73	A 0
66 872 00	Schaltergehäuse	Switch	M 93	A 2
66 873 00	Schaltkontakt	Switch pin	M 94	A 2
66 874 00	Achse	Center spindle	M 95	A 8
57 670 00	Sicherungsring Zahnrad	E ring	M 96	A 0
57 671 00	Scheibe Zahnrad	Washer	M 97	A 0
66 875 00	Feder Zahnrad	Clutch spring	M 98	A 2
57 672 00	Kunststoffscheibe	Poly washer	M 99	A 0
57 673 00	Zahnrad Plattenteller	Cam gear	M 100	A 1
57 674 00	Halter Laserkabel	Wire control holder	M 102	A 0
66 877 00	Lagergummi Mechanik	CDK 90 cushion	M 105	A 1
57 675 00	Feder Lagergummi weiß	Spring	M 106	A 0
57 676 00	Verschlußbolzen Lagergummi	CDK 90 holder	M 107	A 0
57 677 00	Feder Lagergummi schwarz	Spring	M 109	A 0
66 881 00	Führung Zahnrad	Guide plate	M 111	A 2
57 678 00	Riemen Slider	Belt slider	M 118	A 0
57 679 00	Motor Slider	Motor slider	E 17	B 1
57 680 00	Riemenscheibe Slider	Gear wheel	M 120	A 0
57 681 00	Betätigungsarm Schaltkontakt Slider	Shaft	M 124	A 0
66 863 00	Abdeckung Gehäuseoberteil	Main base cover	M 128	A 3
66 560 00	Plattenteller Disc	Turntable	M 130	B 3
66 584 00	Transportsicherung Plattenteller	Transit lock	M 131	A 3
57 682 00	Abdeckung Schraube	Screw cap	M 132	A 0
66 864 00	Halterung Magnet	Magnetic holder	M 133	A 2
66 865 00	Magnet	Magnetic	M 134	B 0
66 866 00	Arm Niederhalter	Arm assembly	M 135	B 0
66 867 00	Abdeckung Magnet	Magentic cover	M 136	A 2
57 668 00	Transportsicherung Slider	Lock lever	M 45	A 0
57 641 00	Gehäusefuß hinten	Leg	M 47	A 0
57 683 00	Abstandshalter	Spacer	M 53	A 0
57 684 00	Pulley Slider	Pulley slider	M 60	A 0

Explosionsdarstellung Cassette
Exploded view cassette

CM . . .

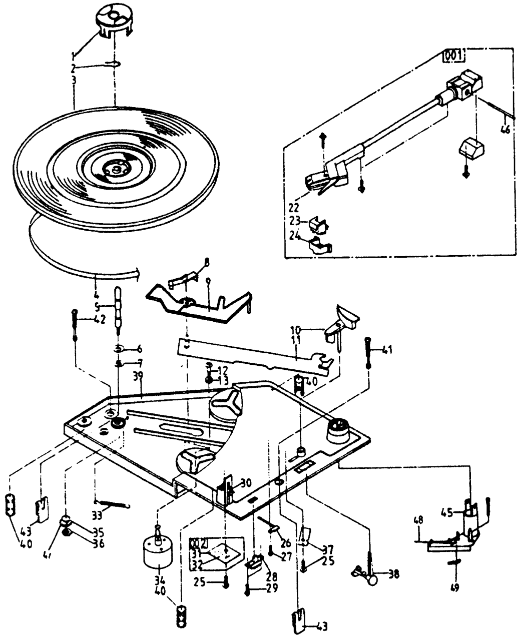


Ersatzteilliste Cassettenmechanik
Spare parts list cassette mechanism

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
66 585 00	Cassettenmechanik kpl. TN-21 ZSW-1188	Cassette mechanism assembly TN-21 ZSW-1188	M 20	E 6
46 863 00	Feder Pauserasthebel	P control spring	CM 10	A 3
46 417 00	Pauserasthebel	Pause lever	CM 11	A 5
44 130 00	Druckfeder Pauserasthebel	Pause lever spring	CM 12	A 3
44 131 00	Sicherungsstöpsel Pause	Pause stopper	CM 13	A 2
32 428 00	Feder Tastenhebel (Vor-, Rücklauf)	Button lever spring	CM 14	A 3
46 864 00	Feder Aufnahmetaste	Record button lever spring	CM 21	A 3
32 423 00	Feder Tastenhebel (Stop, Pause)	Button lever spring (B)	CM 22	A 3
66 709 00	Mikroschalter MSW-1541 T	Leaf switch MSW-1541 T	CM 23	A 4
45 760 00	Feder Kopfträgerplatte	Panel P spring	CM 29	A 4
48 203 00	Feder Bandandruckrolle	M control spring	CM 30	A 4
32 432 00	Feder Löschkopf	EH spring	CM 33	A 3
32 435 00	Feder A/W-Kopf	Azimuth spring	CM 34	A 3
44 134 00	Bandandruckrolle kpl.	Pinch roller arm assembly	CM 35	B 2
44 135 00	Tasthebel Endabschaltung	Sensing lever	CM 38	A 6
44 137 00	Rutschkupplung kpl.	RF clutch assembly	CM 39	B 1
44 138 00	Riemen Rutschkupplung	RF belt	CM 40	B 3
46 866 00	Schwungmasse A/W-Laufwerk	Flywheel assembly rec/play	CM 43	B 7
46 865 00	Schwungmasse Wiedergabe Laufwerk	Flywheel assembly play	CM 44	B 7
66 085 00	Feder	Gear plate spring	CM 45	A 3
44 136 00	Kurvenzahnrad	Cam gear	CM 47	B 2
44 140 00	Zahnrad Vorlauf	Fast forward gear	CM 49	A 7
44 319 00	Feder Wickelteller links	Back tension spring	CM 50	A 3
44 141 00	Wickelteller links	Supply reel assembly	CM 51	B 0
44 142 00	Wickelteller rechts	Take up reel assembly	CM 52	B 1
46 486 00	Spange Wickelteller	Sensor	CM 53	A 3
32 453 00	Gummipuffer Motor	Motor rubber	CM 56	A 2
32 454 00	Schraube Motor	Motor collar screw	CM 57	A 2
44 778 00	Pulley-Motor	Motor pulley	CM 58	A 6
48 830 00	Antriebsriemen	Main belt	CM 59	B 4
46 418 00	Gleithebel Eject	Eject slide lever	CM 62	A 8
32 459 00	Cassettenandruckfeder	Pack spring	CM 64	A 5
66 710 00	A/W Kopf MS 15 R-AA 2 N 1	Play head MS 15 R-AA 2 N 1	CM 65	C 3
66 710 00	A/W Kopf MS 15 R-AA 2 N 1	Record/play head MS 15 R-AA 2 N 1	CM 66	C 3
66 711 00	Löschkopf LE 158-C1	Erase head LE 15 B-C1	CM 67	B 9
66 712 00	Motor SHU-2 LOO	Motor SHU-2 LOO	CM 68	C 7
32 451 00	Aufnahmesperrhebel	Record safety lever	CM 69	A 5
46 861 00	Feder AW-Schalter	P kick lever spring	CM 95	A 2
66 713 00	Mikroschalter Bandsorte MSW-1664	Cr 02 switch MSW-1664	CM 96	A 7
66 860 00	Mikroschalter Play LSA-1115 RK 1	Leaf switch play	E 58	A 3
66 861 00	Mikroschalter Record LS-R 112 U-13 A	Leaf switch record	E 59	A 4

Explosionsdarstellung Plattenspieler
Exploded view player

PL . . .

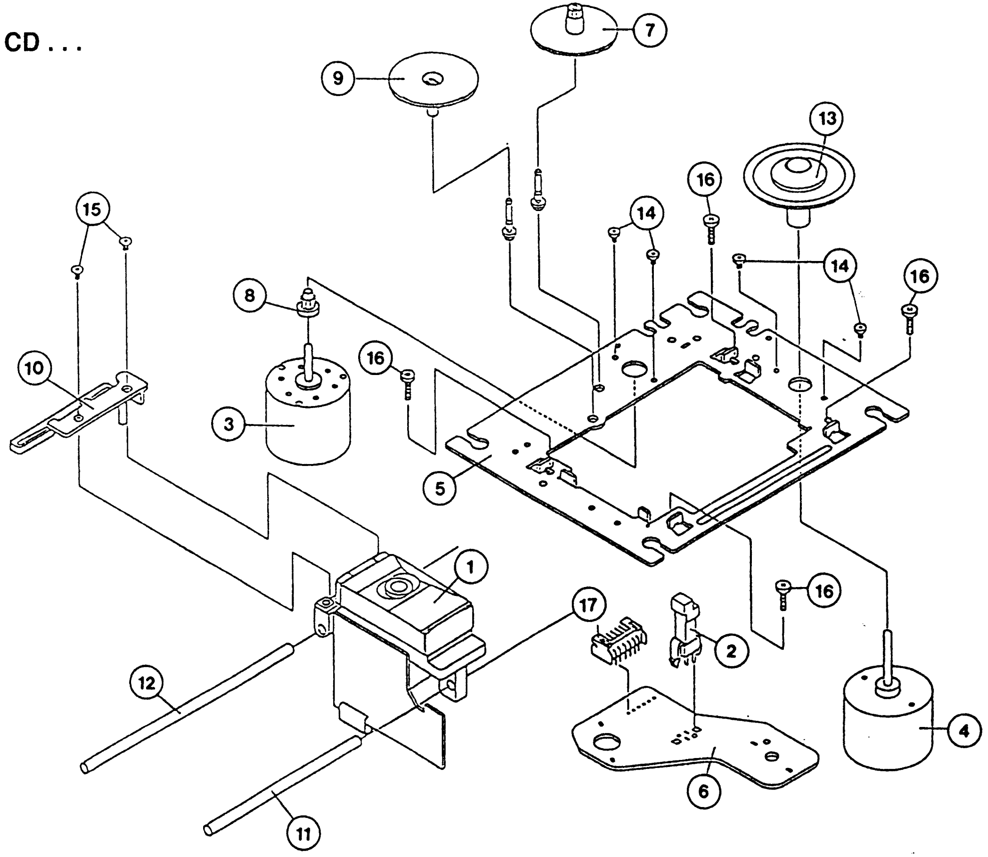


Ersatzteilliste Plattenspieler
Spare parts list player

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 685 00	Plattenspieler kpl. Q 621-05	Player assembly Q 621-05	M 55	E 5
48 653 00	Plattentellermatte	Turntable mat	M 56	C 1
57 686 00	Tonarm kpl.	Pick up arm assembly	PL 001	D 2
48 656 00	Anschlußbuchse	Motor supply P. C. B. assembly	PL 002	A 5
57 687 00	Plattenpuck	Turntable adaptor	PL 1	A 0
48 641 00	Befestigungsspange	Spindle clip	PL 2	A 2
48 642 00	Plattenteller	Turntable assembly	PL 3	C 3
48 643 00	Antriebsriemen	Belt	PL 4	A 8
48 644 00	Achse Plattenteller	Turntable spindle	PL 5	A 8
48 645 00	Schaltklinke	Cam follower	PL 8	A 2
48 646 00	Schaltkupplung	Trip pawl	PL 9	A 4
48 647 00	Lift-Platte	Lift platform	PL 10	A 2
48 648 00	Schaltstange	Slide assembly	PL 11	A 9
48 650 00	System (AT-3600 LA)	Cartridge assembly (AT-3600 LA)	PL 22	D 2
48 651 00	Nadel	Stylus	PL 23	C 9
48 665 00	Mikroschalter	Leaf switch LSB-1123-36	PL 26	A 5
48 654 00	Schiebeschalter Geschwindigkeit	Slide switch	PL 28	A 3
57 688 00	Clip Tonarmverriegleung	T.A. hook	PL 30	A 0
48 657 00	Feder	Slide spring	PL 33	A 2
48 658 00	Antriebsmotor	DC Motor SHR 2 R 10	PL 34	C 6
48 659 00	Tonarmlift	Cue lever	PL 38	A 3
48 660 00	Feder Auflage	Base spring	PL 40	A 2
48 662 00	Sicherungsschraube	Transit screw	PL 41	A 2
48 663 00	Transportsicherungsspange	Retaining clip	PL 43	A 2

Explosionsdarstellung CD Mechanik
Exploded view CD mechanism

CD . . .



Ersatzteilliste CD Mechanik
Spare parts list CD mechanism

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
66 587 00	CD Mechanik kpl. CDK 90 V 1 HYN	CD mechanism assembly CDK 90 V 1 HYN	M 103	F 3
66 627 00	Laserabtaster SF-91 P	Pick up assembly SF-91 P	CD 1	F 1
60 917 00	Mikroschalter Ende	Limit switch	CD 2	A 8
60 918 00	Motor Laser	Motor pick up	CD 3	B 9
60 919 00	Motor Antriebsteller	Spindle motor	CD 4	C 0
60 920 00	Zahnrad Pulley	Middle gear	CD 7	A 1
60 921 00	Pulley Motor	Motor gear	CD 8	A 1
60 922 00	Zahnrad Zahnschiene	Power gear	CD 9	A 1
60 923 00	Zahnschiene Laser	Plate rack	CD 10	A 1
60 924 00	Gleitstange Laser (kurz)	Guide bar (short)	CD 11	A 7
60 925 00	Gleitstange Laster (lang)	Guide bar (long)	CD 12	A 7
60 926 00	Antriebsteller kpl.	Turntable assembly	CD 13	B 2